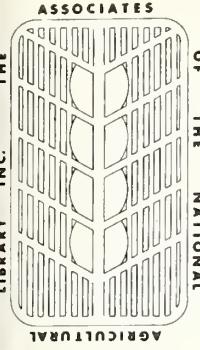


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# ASSOCIATES NAL TODAY

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*LAND USE AND AGRICULTURE*

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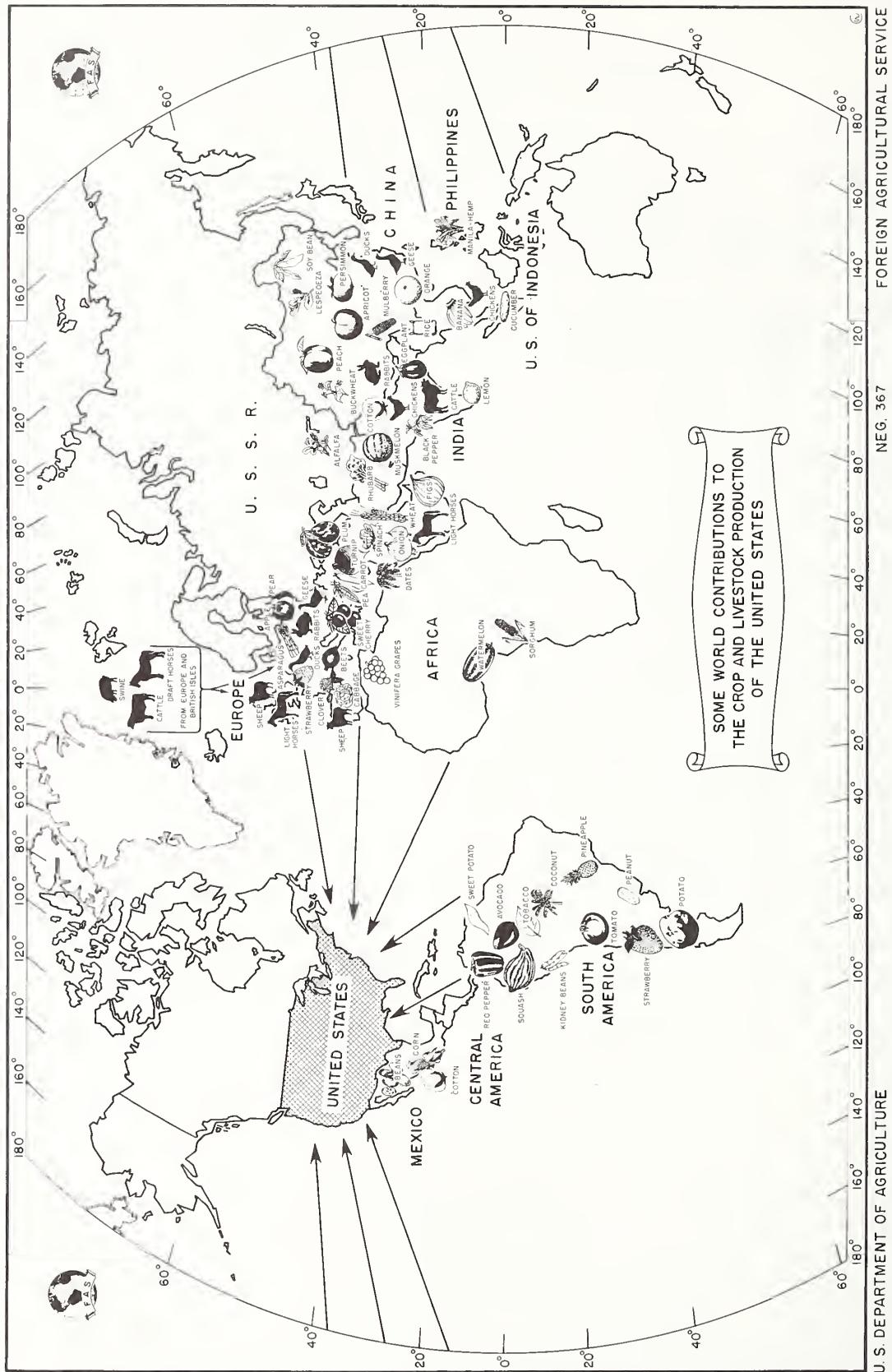
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## INTRODUCTION

With improvements in transportation and new markets, subsistence farming in the United States gave way to commercial farming. Emphasis shifted to those crops that climate, soil, and capabilities allowed one to produce most profitably. The increase in the application of science and technology yielded an increase in the amount of land under cultivation and also of the agricultural output. There also occurred a reduction in the amount of farm labor required. Often small farmers found it increasingly difficult either to afford the rising capital investment in machinery, fertilizers, and pest controls or to compete for markets. Some small farmers for various reasons did not even attempt to practice the improved methods of farming. Gradually we moved from a new nation where about 90 percent of the American people were farmers to a modern mechanized nation where less than 4 percent of the nation's labor force is currently engaged in farming.

Today some researchers are beginning to sharpen their focus upon the relationship between large-scale intensive farming and increased agricultural output on the one hand, and the rising cost of energy consumption, displaced agricultural population, and environmental damage on the other. For example, Ray Marshall and Allen Thompson, in their illuminating 1976 report entitled *Status and Prospects of Small Farmers in the South* (Atlanta: Southern Regional Council, Inc.), pointed out that "large-scale energy- and capital-intensive agriculture . . . creates serious environmental problems" (p. 2). Add to this the overall problem of an estimated quarter million acres of cropland being transformed into urban developments, right-of-ways, highways, and airports. This urban encroachment into previously agricultural areas is resulting in the rising cost of farmland, in the increased taxes on the remaining farms adjacent to suburbia, and in the reduced amount of productive farmland.

Agriculture is a vital part of our national environment. In approaching the serious problem of our existing and future environment, René Du Bos, a renowned biologist at the Rockefeller University in New York City, in his 1968 Pulitzer Prize-winning book, *So Human an Animal* (New York: Scribner) asserted that ". . . we must learn more of the complex interplay between man, his technologies and his environment . . ." (pp. 28-29). This assertion is certainly applicable to the agricultural sector of our economy.

In this regard, there is a growing sense of awareness about the development of policies and practices as they relate to land use and agriculture. This issue of the *Associates NAL Today* contains some interesting papers and book reviews involving this subject area.

Special thanks to the following members of the Editorial Committee: Angelina Carabelli, Judy Merrill, Robyn Frank, Tom Fulton, Irene Glennon; also to the newly created Advisory Editorial Board for their advice and suggestions. Appreciation is also extended to Roger Carson Price for his skill and patience in preparing the camera-ready copy for this issue.

Future issues of this journal will include articles on "Women and Agriculture," "International Agricultural Librarianship: Continuity and Change," and "Indians and Agriculture."

- Editors:

Alan F. Fusonie

Leila Moran

## AN EMBARRASSMENT OF RICHNESS: COLONIAL SOIL CULTIVATION PRACTICES

by  
David O. Percy \*

Most early descriptions of colonial America emphasize the fertility of the land.<sup>1</sup> The land these early observers saw was rich; it had been developed over centuries from the decay of leaves and trees of a vast forest that covered the eastern part of North America. Here were virgin soils awaiting cultivation. If evidence of the land's fertility was needed, men had only to cite the fact that the land was covered with stands of magnificent oak, walnut, chestnut, and maple trees rising as a gigantic canopy over a shaded forest floor.<sup>2</sup>

The soils of these coastal and river plains of America were rich and deep. The depth of the forest mould depended upon how far north these early adventurers settled. It ranged from a few inches in New England to more than a foot in the South.<sup>3</sup> Those who obtained the choice lands along rivers found deep, alluvial soils, washed down from the highlands for centuries.

In America a man could possess more land than he could cultivate. The only restriction on the amount of cultivation was the availability of labor. Here was a new situation, where labor--not land--was the governing factor. If these transplanted Europeans were to become permanent residents in the New World, they would have to raise enough for their own subsistence and hopefully enough to improve their condition. Therefore, the available labor had to be used efficiently.<sup>4</sup>

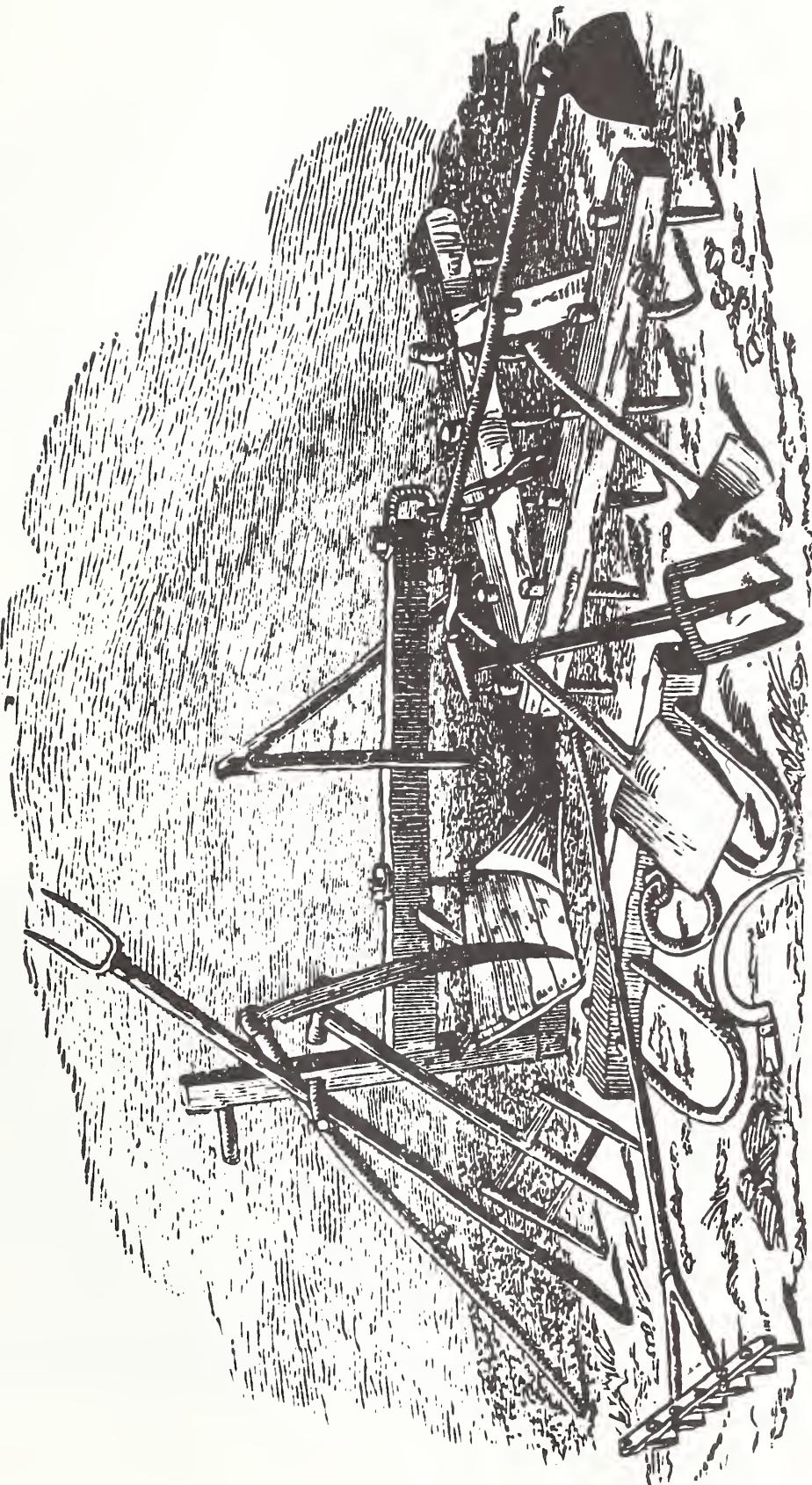
The first task of these settlers, whether they settled on Cape Cod or along the Virginia capes, was to clear away the native vegetation. Faced with the task of removing century-old trees and their root systems with primitive tools and few hands, the settlers quickly adopted the American Indians' practice of girdling standing trees.<sup>5</sup> With the coming of the following spring, the girdled trees no longer burst forth with foliage. With the leafy barrier removed, sunlight streamed through the bare branches and struck the forest floor. The rich forest mould exposed to the sun's rays could now be cultivated.

With these virgin soils ready for the agricultural efforts of men, these early settlers found that the European agricultural practices with which they were familiar were unsuited to the lands and conditions of the New World. In order to survive an ocean away from resupply, these men quickly adopted the crops and cultural practices of the American Indians.

As the Indians had done for years, the colonists, using hoes, scraped the top few inches of top soil into mounds that were scattered among the girdled trees and amid the tree roots. For subsistence they planted corn, beans, peas, squashes, and pumpkins in these hills. The corn stalks provided a support for the climbing pea or bean vines, and the squash and pumpkin vines snaked their way along the ground between the hills of corn stalks. Some planters sowed small grains in the spaces between the corn hills. In regions where the climate was suitable, planters raised a money crop of tobacco--also in hills.<sup>6</sup> This hoed-hill culture made efficient use of the available labor, as several different crops were being raised

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FARMING TOOLS IN USE IN 1790



*Today at Old Sturbridge Village, in a recreated New England farm community of the early 19th century, oxen are used in plowing the sod. (Courtesy, Wayne Rasmussen)*



*Mowing oats with scythe. (Courtesy, Wayne Rasmussen)*



Picture taken on recent field trip to Providence Canyon State Park in Georgia reveals huge gullies up to 170 feet deep, which began forming about 140 years ago, when unwise farming techniques allowed water to flow unimpeded down the slopes.

(Courtesy, Alan Fusonie, May 4, 1977)



Today at Westville, a living historical 1850 village in Lumpkin, Georgia, stumps remain after plowing the sod for planting.

(Courtesy, Alan Fusonie, May 4, 1977)

simultaneously.

The hoed-hill culture, however, exhausted the soil. These settlers found that after several years of good yields, their crops bore less. A typical cropping cycle for the Maryland-Virginia region was to cultivate several crops of tobacco on new lands, followed by several corn crops and then a crop or two of wheat. In areas where tobacco was not raised, the cycle was corn followed by wheat until the yields declined. After five to 10 years of continuous cultivation, the once rich land was exhausted and abandoned to return to native vegetation.<sup>7</sup>

Although the early settlers altered the landscape by killing portions of the forest and exhausting the soil by continuous cropping, they did not render the lands they cultivated sterile. For nearly a century after settlement the area, the amount, and the method of cultivation did not seem seriously to deplete the total amount of rich land available.

Most early settlement was along the level or gently rolling coastal and river plains of the Atlantic coast. Soil erosion from the heavy, sudden rains was not significant.<sup>8</sup>

The hoed-hill method of cultivation also tended to lessen the effects of erosion and preserve much of the soil's fertility. The stumps and root systems in the fields kept the soil loose and provided paths for water to seep into the soil. Only the top few inches of the soil were used, so that the fertility of the soil deeper in the earth was virtually whole. In addition, the double and triple companion plantings tended to protect the soil from erosion by providing a cover for the soil.

For the first century most men had sufficient land to be able to use and abandon acreage every few years.<sup>9</sup> Few colonists lived long enough to cultivate their entire holdings, even though they had to abandon approximately five acres of land every three years. The life-expectancy for 18th-century men was less than 50 years.<sup>10</sup> If a man became a farmer at age 15, he would farm for about 35 years and exhaust and abandon approximately 60 acres of land. Since most middle-class men held about 150 acres, most of them would not have lived to see the exhaustion of all their land--based on these conservative figures.<sup>11</sup>

For a little over a century, men could extract their livings from the rich soil without becoming concerned about using up all the fertile lands available. About

the middle of the 18th century, however, changes occurred that would force those living on the coastal and river plains either to abandon their "exhausted" holdings and move to the frontiers or to begin to take better care of their lands. The factors that affected the use of the soil were the availability of good lands near the coast, the increase in the population, deforestation, and the changes in cultivation practices.

As early as the beginning of the 18th century, large portions of the coastal and river plains were either occupied or claimed, and within the next 50 years good lands near the rivers or along the coast were unavailable unless high prices were paid for them.<sup>12</sup> As a result, new settlers, sons of older settlers, and those on "worn-out" lands were forced to push into the piedmont and on to less desirable lands. These lands were generally thinner and less fertile. As many of these lands were steeper, they were more subject to erosion from rains once the native vegetation had been removed. By the beginning of the 19th century many of these lands would be scarred by gullies. As Patrick Henry would be moved to observe, "Since the achievement of our independence, he is the greatest patriot who stops the most gullies."<sup>13</sup>

In the years between the first settlements and 1770, the population of the English colonies along the Atlantic coast grew from a mere handful of men to over two million. Since the population tended to double every 20 years, the pressure on the available good lands near the coast increased as the country neared independence.<sup>14</sup> This increasing population, coupled with imperial restrictions on expansion and an unwillingness of many men to leave the settled areas, resulted in more intensive cultivation of the land. The population increase in the Southern colonies was aided by the rise of chattel slavery. Slavery enabled and forced land to be cultivated more intensively in the last half of the 18th century. More slaves meant that more of the commercial crops of tobacco, rice, and cotton could be cultivated. In addition, to feed this larger work force more subsistence crops had to be raised. In the Northern colonies, most of which had less arable land to begin with, the natural increase, combined with the American practice of dividing holdings equally among children, resulted in smaller holdings.<sup>15</sup> As the holdings decreased in size, more of the land had to be cultivated if a family was to produce enough for their own subsistence and to engage in commercial agriculture.

Wood was a necessity in colonial America. For housing, fuel, barrels, and fencing, Americans cut down the vast

stands of native hardwood trees. For decades men had cut down the trees that were hindrances to progress, but by the middle of the 18th century deforestation began to be a problem. In the more densely settled areas trees on marginal lands were cut for firewood or lumber and, as a consequence, erosion began.<sup>16</sup> In addition, the demand for wood resulted in timber being cut on lands that were supposed to be resting and being restored by this forest covering.

Toward the end of the 18th century, horse-hoeing husbandry began to replace hoed-hill cultivation. The horse-hoe or plow had a radical effect on the land. These primitive plows did not stir the soil to a much greater depth than did hoes, but the plows made furrows that acted as channels for water run-off. Adding to the chances for erosion was the change in the methods of cultivation brought about by the plow. Since row crops such as corn and tobacco seemed to produce greater yields when the spaces between the plants were kept clean, the horse-hoe allowed farmers to cultivate their crops more frequently and thoroughly. Also, the practice of companion-cropping corn with squashes and beans or with small grains was abandoned. Thus, horse-hoed row crops exposed the bare ground to erosion from the sudden spring and summer downpours.<sup>17</sup>

The effect of these changes and the pressures on the land in the last half of the 18th century emphasized how these settlers on this seemingly boundless, fertile soil were overtaken by altered conditions. The early hoed-hill culture on fertile lands seemed to be the best method of coping with the problem of a shortage of labor. When the labor supply began to ease, however, the practice of using the soil to its fullest and then moving on to new lands was well established. The changes in areas cultivated, cultural practices, and numbers of those engaged in agriculture without a corresponding change in the way men used the soil led to the ruination of vast tracts of land along the Eastern coast.

Although the "gut and git" type of agriculture continued well into the 19th century, particularly among those men who believed that they lacked the capital and labor force to make a living by any other means, changes in the way the soil was used did begin before the close of the colonial period.<sup>18</sup> Men who could not or would not move to new lands were forced by necessity to rescue their old lands. These transplanted Europeans were not ignorant of how to retain and restore soil fertility. They knew the effects of animal manures. Cow-penning became popular in Virginia as a means of fertilizing lands that previously

would have been abandoned. Along the rivers and bays of the coasts, fish were used to fertilize fields. Ashes, plaster of Paris, and marl were transported and spread on "worn-out" soils to restore their fertility.<sup>19</sup>

The effects of erosion were noted and corrective actions taken. Instead of plowing up and down hillsides, farmers were urged to plow across them to check the flow of water. The practice of abandoning exhausted grounds to nature was replaced with green manures and grass planting.<sup>20</sup> For some lands it was too late. What had been created over the centuries had been consumed in a few generations.

Those men and women who settled colonial America found a seemingly endless expanse of fertile soil. Since the amount of land seemed to be more than they and their progeny would ever be able to cultivate, there was no need to preserve the fertility of the small plots they did cultivate. It was as if there was a huge mountain of fertility from which only a spade-full was used every once in a while. As long as only a few were wielding spades, the mountain seemed to retain its size. However, since each generation had double the number of diggers, the mountain of fertility began to disappear before most men were aware of what was happening. Surrounded by large areas of abandoned lands, the survivors gradually changed their ways.

Men such as John Beale Bordley, John Lorain, and the correspondents of the early agricultural improvement societies (whose observations and recommendations for change are preserved in the National Agricultural Library) arose to lead farmers and persuade them to alter their agricultural practices. These changes designed to preserve soil fertility had to come in their season, which occurred only after much of the fertility had been exhausted and the land abandoned, creating a need for change.

The colonists were no more prodigal or ignorant than succeeding generations of men. They were forced by a dearth of labor to mine the soil's fertility. The very richness of the soil, their most abundant resource, lulled them into a sense of blissful security about the future and the future of their children.

#### NOTES

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19. [John Beale Bordley,] *Queries Selected from a Paper of the Board of Agriculture in London, on the Nature and Principles of Vegetation: with Answers and Observations by J. B. B.* (n.p., 1797), p. 3; Jared Eliot, *Essays Upon Field Husbandry in New England and Other Papers: 1748-1762*, ed. Harry J. Carman and Rexford G. Tugwell (New York: Columbia University Press, 1934), p. 22; Thomas Jefferson to [address lost], Philadelphia, March 23, 1798, Betts, *Jefferson's Garden Book*, p. 263; Janson, *The Stranger in America*, p. 446; William Emerson, *History and Incidents of Indian Corn, and Its Culture* (Cincinnati: Wrightson & Co., Printers, 1878), pp. 354-55; Gray, *Agriculture in the Southern United States*, I, 198-99.
20. John S. Slaughter, "On the Cultivation of Indian Corn &c.," *Memoirs of the Virginia Society for Promoting Agriculture containing Communications on Various Subjects in Husbandry and Rural Affairs*, 1818, p. 21.

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The energy situation dictates that there will be further and intensified contests over public lands, as public policy must balance the need for energy against traditional land use considerations. These confrontations and recently enacted requirements for restoring mined lands will result in more documentation. Of even greater portent for expanding the documentation on land use is the movement to give the federal government a greater role as monitor, if not policy maker, for land use on private and state holdings. Trends indicate that the National Archives and Records Service will become the repository of even more detailed

records on land use than the already considerable volume.

#### NOTES

The most recent guide published by the National Archives and Records Service is *Guide to the National Archives of the United States* (Washington, 1974). Other sources used are Harold T. Pinkett, "Land Use U.S.A.: An Archival Profile," Preliminary Draft prepared for the Conference on the National Archives and Research in Historical

(Concluded on page 39, col. 2)

## EDMUND RUFFIN: HIS CONTRIBUTIONS AND LEGACY TO EARLY LAND USE IN AGRICULTURE

by  
Charles E. Kellogg \*

Despite the lack of generally good farming methods in the early history of the United States, many methods used were copied from Europe. Both George Washington and Thomas Jefferson, and others, got advice and machines from England. Even those who visited farms in Europe rarely studied soils on the farms or those in the United States. Many of the European farms were small, and manure was plentiful.

Edmund Ruffin was an outstanding exception. He was a Virginia farmer who was said to have fired the first shot at Fort Sumpter and who shot himself when General Lee surrendered.

Ruffin's main book, *An Essay on Calcareous Manures* (first issued in 1832), was reprinted five times by 1853. One of the first prominent publications of his views appeared in the *American Farmer* (Dec. 28, 1821, Vol. III, 314-15); he also had papers published in the agricultural books of the U.S. Patent Office.

These annual books were the forerunners of the *Yearbooks* of the U.S. Department of Agriculture. The Commissioner of Patents published two books each year, one on patents and one called "Part II on Agriculture."

Liming was an old practice in parts of Europe. Yet Ruffin may have been the first farmer in the New World to use lime consciously to correct a soil condition that he rightly judged to be soil acidity. He came to this conclusion after studying Sir Humphry Davy's *Elements of Agricultural Chemistry* (1815) and the soils and plants of his own farm, where he made several experiments. He explored for marl, studied, and wrote down his findings and theories. He explained the increased income to be had from the use of lime or "other calcareous manures." He scolded farmers who did not follow his advice. Those who did not accept it had "worn out" soils that continued to be abandoned to broomsedge and Virginia pine, and the slopes continued to erode. The advice of E. W. Hilgaard in his *Report on the Geology and Agriculture of the State of Mississippi* (1860) was similarly disregarded by farmers for many years.

Ruffin also pushed hard for agricultural colleges and wrote much about the need for them.<sup>1</sup>

Because of Ruffin's strong pro-Southern stand, few of the agricultural colleges in the North had his books. I first saw them in Washington. Later, over the years, I was able to find many of them for my own library.

Now we know that he made reasonable determinations of exchangeable calcium on the soils of his farm in his own laboratory. He did a great deal to improve the farming of his time and later.

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\* Charles E. Kellogg, retired scientist, USDA Soil Conservation Service, and president of *Associates NAL Today*.

Ruffin wrote for several of the agricultural books printed by the U.S. Patent Office. In the one for 1852 he had an excellent essay on "Southern Agricultural Exhaustion, and Its Remedy" (p. 373 *et seq.*). In this paper he urges the use of manures and lime without letting the soil become infertile. He urges the use of marl from the start, while discouraging excessive tillage. He raged against allowing the soil to deteriorate. Many farmers had reduced their incomes by not using lime and other manures for their soils. He wrote that the frequent turning and loosening of the earth by the plows and hoes advances the decomposition and waste of the organic matter and exposes the soil, except on the most level surfaces, to destructive washing by rains. He seems to argue that this result is most common with much slave labor. Then, too, he adds that much excess stirring of the soil is due to the effects of tariffs promoted in the Northern states!

For some time Dr. Daniel Lee was editor of these books. He accepted several papers from Ruffin. He trusted Ruffin, and one paper he did not review in advance. This one contained a tirade against the Northern business people. Dr. Lee was subsequently dropped as editor.



EDMUND RUFFIN (1794-1866)  
(Courtesy, National Agricultural Library)

With the founding of the U.S. Department of Agriculture (USDA), the *Yearbooks* for agriculture were transferred from the U.S. Patent Office to the USDA--with much contention.

In the USDA *Yearbook* for 1895, Mr. W. P. Cutter, Librarian for the Department, wrote a good article on Ruffin as "A Pioneer in Agricultural Science"; and he is referred to in later *Yearbooks*. His political views seem to have been partly forgiven. Ruffin is still not credited for his early work on soils. Recent *Yearbooks*

of the USDA include favorable statements by and about him, including the one for 1938, *Soils and Men* (p. 563); the one for 1957, *Soil* (p. 5); and also the *Yearbook* for 1964, *Farmer's World* (p. 8).

The Morrill Land-Grant College Act provided for the establishment of agricultural colleges in the United States after the Civil War. Many farmers and their sons owed a great deal to Ruffin's writing on this great need.

As time went on, soil scientists learned that soils need application of lime and other plant nutrients (including nitrogen, phosphorus, potash, magnesium, boron, and others in proper balance. Today most agricultural colleges have soil testing services at nominal costs for farmers.

Thus many farm people owe a great deal to what Edmund Ruffin discovered and wrote about, on both education and the maintenance of soil fertility.

For further reading, see especially the fifth edition of *An Essay on Calcareous Manures* by Edmund Ruffin, published in Richmond, Virginia, in 1853. Also the *Bulletin of the Virginia State Library* (Vol. XI, Nos. 3 and 4; July 1918) gives a great deal about Ruffin's writings and notes from his *Farmer's Register* and lists several papers about him.

#### NOTE

1. See *Premium Essay on Agricultural Education Submitted to the Committee of the Southern Central Agricultural Association* by Edmund Ruffin of Virginia, published by J. W. Randolph, 121 Main Street, Richmond, Virginia, 1953. Despite Ruffin's strong dislike of the Northern states, much of this essay was used in supporting the Land-Grant College Act.

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utilize the spirit. For this belief in a real center, in beauty, and in the best of the heritage of my past, may this library be a symbol--an enlightenment for Dartmouth--a token for the world.

This library was for me a place of enchanted reverie, an island of peace, a promised land. But what we needed for our practical life was the blessed and indispensable institution of the Department of Agriculture in Washington, D.C.

## THE FARM IN THE GREEN MOUNTAINS

by  
Alice Herdan-Zuckmayer\*

Excerpted and translated by Irene Heppner

In May of 1939 we received notice that our visas for America were ready. Some days later we heard that the whole family had been stripped of its citizenship by Germany and Austria. Our house in Austria, as well as our apartments in Berlin and Vienna, had been confiscated, looted, and the remaining contents destroyed.

Five weeks after our arrival in the United States we arrived in Barnard, Vermont. During those first five weeks we had lived in the apartment of a friend in New York: Dorothy Thompson, the famous journalist, whom we had met in Berlin in 1925. We saw everything. We went everywhere. . . . One day our hostess suggested, "Let's go to Vermont." We drove from the Windsor railroad station through the Green Mountains to Barnard, Vermont (les monts verts--Vermont, the state of the green mountains).

It is a poor state compared with others. The people have little to gain and not much to lose. This moderation and this feeling of simplicity make them independent of life's uncertainties and provide them with a sense of pride and fearlessness.

Our friend had found a little house for us in Barnard, where we stayed for three months of our first summer in America. The next summer we were again in Vermont. During autumn, winter, and spring our family had dispersed--the children in different states, Zuck trying (without success) to find a goldmine in Hollywood. Zuck then accepted a teaching position in New York, where we found a small apartment. I kept house and cooked--then quite an unaccustomed activity for me. The war went on in Europe, and each of us lived in constant fear of tomorrow. Zuck had to meet a deadline for the delivery of a book. We sublet our apartment for the summer and again went to Barnard for three months. The rural life reminded me of Henndorf, Austria, where we had lived for 12 years, surrounded by farms. Cows had grazed below our windows; chickens had crossed our paths; geese and ducks had waddled past us. I had drunk milk every day--had eaten butter. Every morning my breakfast egg had been served to me. But I had no idea then how the animals lived whose products I ate and drank, how cows were milked, where and when eggs were laid, what the animals ate.

In Europe, agriculture was a realm that one did not enter unless one had the necessary knowledge, which farmers have acquired through modern research and century-old tradition. In America, however, many farmers come from other professions and start as part-time farmers. We had no idea then what an adventure it would be. We had no idea of the Vermont winters; therefore, we did not foresee what it meant to have a farm without adequate help.

\* Alice Herdan-Zuckmayer, *Die Farm in den grünen Bergen*, excerpts relating to agriculture. © Fischer Taschenbuch Verlag GmbH, Frankfurt am Main, 1956 (new illus. ed., 1968). Alle Rechte vorbehalten durch Alice Herden-Zuckmayer.

In this our second summer we lived in the same house as in the first. It was centrally located to search for a farm, but we found that a car still was a necessity. The next small town, where we did errands, was about 10 miles away; the next railway station, 25 miles; the nearest large university, 30 miles. . . .

Zuck did not like riding. He walked six to eight hours through the woods and let me do the farm hunting. One evening I returned again without having had any success, and I was desperate. Suddenly Zuck said, "I have found the house."

The next day friends went with us to see it. When we turned from the main street into the woods, we found a road sign with an arrow saying "Dream Valley." This valley was indeed like a dream of beauty. The silence was interrupted only by the wheels spinning on the soft grass, the roar of the engine, and the cursing of the driver.

Suddenly there was a clearing with an enchanting view. To the right were meadows; to the left, a small mountain lake with a rowboat. In the distance one saw the blue cone of Ascutney Mountain. In the center we saw a house built in 1783, when the Indian attacks had slackened. It was locked. To the side of the house was an enormous barn, where we later put up hay, pigs, and at times goats. Very near to the house stood a small shed for drying corn. It rested on six legs of stone, like the huts used by the farmers of the canton Valais in Switzerland to dry meat.

The farm was called Backwoodsfarm. Zuck reported that on one of his walks when he had gone near the house he had seen a man mowing. "Good weather," said the man.

"Beautiful weather," said Zuck.

The man mowed. Then he went to a water pipe and said, "Good spring water. Would you like a taste?"

"Yes," said Zuck. "I'd like to live here."

"Yeah," said the man.

"Did you ever think of renting the house?" Zuck asked.

"No."

"Could we talk about it?"

"Yes," said the man, "come talk to me any time."

The house had no plumbing, no bathrooms, no electricity, no telephone, no stoves. The owner rented it to us cheap. He wanted to make the house livable, and he started to work. In a month and a half everything was ready, done by him with only one helper; and on September 15 we moved in.

The first winter could have been quite peaceful if the war had not begun. We had the radio on day and night. In the days of the Japanese declaration of war a terrible cold crept into the house. We did not know whether it was the exterior cold or the despair that made us shiver constantly. We shivered for three days and three nights: Monday, Tuesday, Wednesday. On Thursday came the German declaration of war. Thursday afternoon we realized that we had forgotten to buy everything from salt to bread.

Zuck went to the village with a large basket on his back and a knapsack in his hands. To go and come back from the general store took an hour and a half. Zuck had reminded me, "Don't forget the fire!"

I sat alone and thought: "This is the end. Over there we no longer belong, and here we don't belong yet. Will they trust us, since we came from the land of pestilence? Will they send us to camps or deport us?"

When Zuck returned, he found that I had forgotten to keep the fire burning in the stoves; and in the evening the water pipes were frozen. The reservoir was empty and nearly ready to explode. The fire in the kitchen stove had to be extinguished. We spent half the night working. Zuck took the glowing coals from the kitchen to the open air. He fetched water from the pond, which was covered with ice and had to be hacked open. The next day our landlord came with a plumber, and they heated the pipes so thoroughly that one burst and a flood came down and ruined our library. This catastrophe taught me to watch hearth and fire. . . .

Meanwhile we had moved to the farm. Tipsy lived in the barn like a real country cat and caught mice. . . . Mirror, now one and a half years old, lived an urban, quiet life with us in the house like an old tom-cat. He detested the life of country cats.

Overnight a transformation took place. One morning Zuck came to my room shortly after sunrise and stood at the foot of my bed. On his face was that forlorn expression

he had before announcing surprising or rare facts. I grumbled about being aroused so early, because I had had an almost sleepless night. Mirror had been sick again; he had had cramps, and I could only ease his suffering with Valerian tea, magic laying on of hands, and muffled cradle-songs.

Zuck asked, "Did you hear the caterwauling last night?"

"Of course. The whole night they fought under my window and howled like coyotes. Tipsy must be in heat again."

"No," whispered Zuck, "it is not Tipsy." And he looked stealthily at Mirror.

I was breathless. "That is not possible," I stammered--and looked in horror at Mirror.

"Yes," said Zuck, "Mirror is a she-cat."

During the same week, Mirror became sound as a bell; and a few weeks later "he" delivered three babies. After that, "he" had young often and competed with "his" mother in productivity. Indeed, we often had more cats than mice in the house. But when Mirror was between litters and not nursing, "he" forgot "his" offspring and conducted "himself" like a contemplative, venerable, and tranquil tom-cat. So we never dared to address "him" as a she-cat. "He" forced us to understand that "he" was lord and master in the house and that "his" times of motherhood were to be seen only as metamorphoses. "He" became the enchantress of the household, and we obeyed "him."

Then also we had two dogs.

Then came a duck (Gussy) and, with her, a chicken (Elise). Both fowl arrived unexpectedly. Friends that had big chicken houses told us of a chicken that looked poor, thin, and nervous. It was not exactly attacked by the other chickens; but as soon as it wanted to feed, the others amused themselves by pushing it away.

"It will die," the owner said. "It is healthy, but it cannot assert itself."

"Can I buy it?" I asked. "I would like to start with a difficult chicken, so that I can get accustomed to dealing with problem animals, before we get our poultry."

"You don't have to give me more than 50 cents. It does not lay eggs, because it is too terrorized. And here is a duck that you can have for nothing. She is too stringy for consumption, and she upsets the whole run."

This is how we met Gussy, the antisocial duck. We built each of them a coop in an empty stall; and there they were, each with space big enough for a cow. Elise blossomed and made up for what had been denied her during communal feeding. After three weeks we had to put her on a diet to prevent her from bursting. Later on, when the real, profitable farm hens arrived, it was she who bossed the roost. She was, so to speak, the receptionist who showed the new arrivals their nests, their roosts, and their feeding places. She was intelligent, and she adapted pleasantly to the chicken community.

Completely different was the case with Gussy. She saw in us her most deadly enemies. When we brought her food, she looked at us askance and mean--as if we had mixed rat poison in her food. She never forgot that she was a Moscovy duck, descendant of wild ducks. She repeatedly tried to escape, and we soon became excellent duck-catchers. Her twenty-third attempt to get away was successful. We gave her up as lost, bitten by a weasel, or eaten by a fox or skunk.

However, in early summer, when we already had quite a sizable number of chickens, ducks, and geese--Gussy reappeared. She waddled slowly across the meadow, followed by 11 yellow, newly born, chirping ducklings. She did not enjoy seeing us again, and she looked at us with the same expression of dislike and aversion. But she was determined to conquer her distrust, to give her young a good berth. Soon she left them to our care and stayed away a long time. But she always knew where to bring her future offspring. She used the farm as an advantageous transit area without giving up her unrestricted liberty. We were amazed and full of admiration.

The spring when Gussy escaped the first time and had been given up for lost, we bought a mother duck and two ducklings. With this purchase we began our life as farmers in earnest. Zuck understood a bit about zoology--mainly butterflies, predatory animals, and wild birdlife--but he loved all animals. I, with some exceptions, did not like them. I had studied medicine for seven semesters (including anatomy) and had decided that nothing could make me shudder. This is an important factor in farm life, as I found out later. But I knew nothing about animals.

I did have some knowledge of vegetable growing, but our combined knowledge of agriculture was precious little. How were we to acquire the necessary education in the quickest way? We could not bother our neighbors. They were miles away and overwhelmed with worries. Many of their farmhands joined the services; and others had gone to work in factories, where they got higher pay.

Farmhands in the European sense do not exist in America--certainly not in Vermont, where any kind of servitude is detested. Our farm as we had planned it would be much too small for a skilled farm worker, and his salary would be much too high for us. So, it was clear from the start that we had to acquire practical knowledge by theoretical means.

We asked ourselves: "What kind of animals do we want?" "Where should we buy them?" "How does one build hen houses?" "How a stable?" "How does one feed animals?" "What will be the cost? and how high the profit?"

America maintains the blessed and indispensable institution of the Department of Agriculture, in Washington, D.C. This USDA publishes pamphlets that in 4 to 80 pages clearly and understandably explain about agriculture.

We learned about this service through a letter from a Congressman from Vermont, who wrote:

Dear friend: Agriculture is more important today than ever. The useful pamphlets listed below represent the result of research work and experiments, which were performed by the Department of Agriculture. Mark the pamphlets you want, but please, not more than five, so that others may profit by the limited supply. As your representative in Congress, I would like to serve you and others. Please, write to me about anything that pertains to the legislature and let me know any time you feel I could be helpful to you. Don't forget to enclose your name and address. With best wishes, yours . . . .

Meanwhile, I had heard that the USDA has branches in all states and that ours in Vermont publishes pamphlets oriented to the climatic and agricultural conditions of Vermont. I could select and pick up copies in the Agricultural Extension office in the next city. This office furnishes (gratis) 10 brochures, but they gave me many more since I was a beginner and needed more

information than did advanced readers. In addition, the Extension agents encouraged me to ask the most fundamental and absurd questions--without embarrassment to either side.

The selection of brochures I made pertained to the following subjects:<sup>\*</sup>

the farm budget; how to select a healthy horse; acarids and mallophagans of poultry; churning on the farm; disinfection of stables; milkgoats; duck breeding; goose breeding; plans to construct a farm; hogs; how to dry medicinal plants; breeds of chickens; protection from lightning; marketing of eggs; hen houses and their interior installations; dairy industry for beginners; the farm garden; storing of gasoline and kerosene on the farm; selecting hens for egg production; work clothes for women; white ladino clover; varieties of potatoes for Vermont farms; how to make a good manure pile; animals for small farms; feeding of hens; marketing farm products by mail-packages; making slipcovers for chairs; currants and gooseberries and their relation to white pine rust.

For Zuck, I got the following:

life of wild birds on the farm pond; maintenance of chimneys and stoves; a dry basement; sharpening of knives.

The whole winter we studied these publications, calculated, weighed. First, we wanted to have chickens, ducks, geese, pigs, cows, and horses. But they involved too much initial investment. Besides, transporting the milk to the collecting point would have been impossible for about six months of the year. In "Animals for the Small Farm," they advised not to buy a horse. For plowing, it is cheaper to hire help than to buy a horse.

As soon as we had decided what animals to have, we started courageously to remodel the stables. Thank the Lord that He kept us from foreseeing the difficulties and toils that would result!

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\*The lists are free translations of the subject matter. Exact titles can be obtained by contacting the Office of Communications of the USDA.

After the worst frost had passed, nearly May, we started with the hen house and the old stables. A joiner and another man helped. Notwithstanding the commotion, trouble, and excitement, the work was done in four weeks. The hen houses were built to the specifications of the best expertise--not ours, but the USDA's.

When we went to a farm to buy our first six hens, it was a beautiful warm day. The sawdust smelled of freshly felled trees, and the hay exhaled a sweet fragrance from the nests. The hen, Elise, strolled around in the hen house. The six chickens moved from the transport cage one after the other and looked quietly around the new house. Soon we learned to distinguish each individual chicken by its feathers, movements, and expressions.

These hens were our foundation stock. A week later we added 57 more chickens, plus 20 ducks, five geese, four goats, two pigs, two dogs, and three cats. With these 93 animals our farm life began. They kept us busy and did not allow us to rest for a moment. The chickens were bred from germ-free mother hens (meaning that they were raised on farms certified by USDA to be free of *pullorum* bacilli, a major source of loss in the breeding of fowl).

Our farm bulletin contained the following note: "Rats cost the farmer of America \$63 million per year. Consult the nearest USDA office for the best way to conquer this pest." We estimated the population of our farm to be from 50 to 60 rats. The bulletin stated that the number of rats is approximately the same as that of people. Half of them live on farms. The food for a rat costs two dollars per year. Our rats ate their way through the supposed yearly cost of their food in three weeks! We had to resort to a war of extermination that lasted two years.

One morning I found traces of blood in the house where we kept the young chickens. They cowered in a corner and did not move. At 3 p.m. two chickens had died; at 4 p.m. I was in the USDA office in the next city. According to my description, the sickness was diagnosed as coccidiosis (the red dysentery), a parasitic infectious disease that causes high losses. Preventive measures were known, but no sure cure.

However, they advised me to go to a big food-supply store in the next city to get medication. Then they gave me *Farmer's Bulletin* No. 1652, which describes poultry diseases. I drove 16 miles farther, and I arrived at the store just before closing time. I said "Coccidiosis" and asked for a bag of "flush" and one of

"pellets"--expressions they had taught me at the USDA office. They gave me three types of medication, with an illustrated booklet from the laboratory that produced the medicine.

In the illustrations the chickens showed the same dejected position and bent posture as I had seen in ours. At 7 p.m. I was back home with medicine, disinfectants, and a faint hope for rescue from too great a loss.

We put the booklet on the wall and tried to imitate all the illustrated procedures. We worked for five days and smelled from head to foot of creosote. Every day all stables were cleaned, the sawdust changed, the chickens fed the medication, rinsed inside with "flush" and strengthened with "pellets." Every morning we held our breath in fear of more casualties, but no more chickens died.

After this triumph I did not dare to risk another outbreak of a disease, and I laid in a prophylactic pharmacy with the help of the farm bulletins of the USDA, agricultural magazines, and so forth. We rarely lost an animal; but when one died and we did not know the cause, we packed it according to regulations and sent it to our veterinary diagnostical laboratory. After a short time we would receive a reply with advice about which steps to take against a repetition of the occurrence.

*Bulletin* No. 1632 also helped in diagnosing a case. We read there that if a hen has scurfy, swollen legs, then she has mites--and what to do about it. Among other measures, we had to dip her legs in crude petroleum. The first hen kicked so hard that our hair, cheeks, and noses were drenched with crude petroleum and we smelled like gas-station attendants. But the chicken soon was cured.

Then, however, came a serious case. One of our ducks bent one leg backward, and soon the others followed. She was helpless. She could not move and perished miserably. We sent her to Montpelier's veterinary laboratory, which replied: "The organs did not show changes. We would be interested to find the cause of death. Please, send us one or two of your lame ducks."

No, that we could not and would not do. When we saw the next signs of this disease, I read about all the illnesses and paralyses of legs (in *Bulletin* No. 1652) and found similar symptoms for a disease caused by vitamin deficiency. We put the bent legs in splints to bring them back to a normal position and started to stuff the ducks with vitamins. We mixed a certain dosage of

vitamin B complex and extract of liver with goat's milk (and sometimes added pure yeast). Twice daily they got dishes heaped with appetizing vegetables such as soybeans, clover, or pea-leaves. We dipped the patients daily in water and dried them in the sun. We made them hobble around a bit for exercise. I cannot describe the moment when we took off the bandages: the fear we had, but then the joy--when the ducks stepped away on straight, unbent legs and waddled toward the pond. They had returned to life. But they played the convalescents for a long time; they came to the kitchen daily to beg for their extra rations (and they got them, too).

Having reported on the successful treatment of animals, it seems that it is about time to put the USDA in the limelight. It was not our special efficiency, talent, and intuition that made it possible to work successfully on the farm. We had not done anything but recognized from the start that from cradle to grave one can live by the USDA--in stable and meadow, in the fields and in the woods, in the house and on the farm, in kitchen and workshop. We knew that it was wise and sensible to take this invisible teacher into our house and incorporate its teachings into our lives.

I found this description of the USDA by Ferdie Deering:<sup>\*</sup>

The Department of Agriculture influences the life and the standard of life of the American farmer and his family. There is hardly a phase in the farm life which is not connected with one of the fifty different divisions of the USDA. The functions of these sections comprise about everything that the farmer has done, what he does do, what he plans to do, and what he would like to do. There is an agency for credit at a low rate of interest for the farm or the upcoming harvest. Money is given to terrace the fields in order to avoid erosion, or to construct a pond in the pastureland, or to use fertilizers and plant legumes for increasing the productivity of the soil. The offices tell the farmer how to grow spinach for the household and about truck farming for the vegetable market. They regulate the time and place of the market for his products. They give subsidy to the dairy owner when the consumer thinks the milk is too expensive.

They install electricity, so that the milking machines can be used. The USDA employs thousands of specialists who do research to find new corn varieties, better harvest methods, and meant to conquer plant pests and cattle diseases. They try to counter the perils of drought, flood, and frost. . . . One bureau studies nutrition and gives advice in this field, as well as how one can make the best comfortable and pretty chairs.

At first we knew little about the functions and jurisdiction of the USDA, and our relations with it were purely practical. They provided us with bulletins; they did research on our soil and animal samples; and they gave information when we requested it. There must be many information bureaus, laboratories, researchers, and experts who publish their findings intelligibly to laymen. But, obviously, the USDA is one of the most significant and important institutions in the United States. We spent years of our daily lives following its advice, and I feel I must further recognize this enormous source of help.

When we received the first bulletins, sent by the Congressman from Vermont, and got to know what was offered, we started to check our soil. We had about 190 acres of land--two-thirds in woods, one third in pasture. We decided not to cultivate more than one and one-half acres, since getting help was even more of a problem during the war than in peacetime.

I wrote a card to the USDA and soon got a cylindrical box in which they expected to receive samples of our soil. After a while I got a report about the properties of the ground we wanted to till, along with advice about fertilizing it and where to put legumes and millet grass in order to keep down weeds.

This correspondence took place the first autumn of our stay on the farm. During the winter we used the information to plan our next season. As I mentioned before, we knew what animals we wanted, where to buy them, which breeds to buy, and how the housing had to look. Next we had to study how to feed them. This was a tremendous study. We were surprised at the variety of nutriments needed for growing poultry, for egg production, for goat-milk production, for fattening pigs. Scientifically combine mixtures are ready for sale from large feed plants: chicken feed, amyloid for growing chickens, laying mash, fattening mash, scratch feed, milk feed, "manna" for calves, and others. In addition, we

\* USDA Manager of American Agriculture. University of Oklahoma Press, 1945 (NAL 281.12.D36).

grew alfalfa, soybeans, ladino, red clover, turnips, peas, parsnips, chards, and corn for the animals; and we kept pasture land. For ourselves we planted corn, potatoes, and a vegetable garden.

Since we did not know the traditional ways, we had the courage to jump into the new and unknown; and we were captivated by the joy of trying new things and getting the results. For instance, by closely regulating the method of feeding, one could retard and shorten the moulting of the chickens, so that the poor laying season was often restricted to two months and started only in December.

Another new suggestion we tried was to change the pullet feed to laying mash at the proper time, so the young birds would start to lay as early as 5 or 6 months of age. And they would start producing in the fall, when the prices for eggs go up.

It was not only a matter of higher production, but also of the fact that we were completely on our own in America, especially in the country. We could not count on agricultural or household help, both of which are hard to get and expensive. We had to use a system to manage the many complexities of farming, a system that was tailored to our new standard of life. The theories of the system were done to a great extent by the USDA, but the practical part we had to work out by ourselves. Still, it is amazing how the USDA dealt with minute details of agriculture, as well as with seemingly insignificant items of housekeeping and with the details of primitive daily life on the farm.

What kind of institution is this that, on the one hand, occupies itself with gigantic factors of agriculture which play a decisive role in world food production and that, on the other hand, counts the steps of a housewife in her kitchen in order to find out which kitchen facilities could save her two-thirds of these paces? All this detailed information that I received kindled an interest to know how this remarkable Department of Agriculture had originated and how extensive its functions now were.

The functions of the USDA comprise three main groups-- administration, research, and information--which deal with all branches of agriculture, from road construction, farm credit, market prices, and entomology to home economics.

The history of the USDA starts with the Patent Office,

which received from many places new seed to test. A patent commissioner, Henry L. Ellsworth, a farmer from Connecticut, made inspection trips through the whole country in the interests of the Indians. He recognized not only the agricultural potential of the prairies of the West, but also the ignorance and bitter needs of the settlers there. He was convinced that help was possible by means of better tools and seeds that were right for the climate and the soil. He took it upon himself to have seeds and plants distributed to all farmers but especially to the ones in the West. (See *History of Agricultural Education of Less Than College Grade in the U.S.*, compiled by Rufus W. Stimson and Frank W. Lathrop, 1942. U.S. Office of Education, Vocational Division, Bull. No. 217. Agricultural Series No. 55. LC1045A26 no.217.)

In 1836, under the energetic Mr. Ellsworth, the Patent Office became an independent bureau. Three years later this new bureau got \$1,000 for agricultural and scientific purposes.

In 1862, President Lincoln named a Commissioner of Agriculture and created a separate Bureau of Agriculture. The Homestead Act and the Land-Grant College Act of the same year completed the basis of the determined support of agriculture. The history of agriculture and of the development of the USDA is an interesting conglomerate of history, science, and politics. The significance and the present extent of the USDA is only understandable if one knows a few fundamentals of American agricultural history.

A. C. True wrote in his *History of Agricultural Education in the U.S.* 1925. (NAL 1 Ag84M no. 36):

The first settlers in America had to combat innumerable big obstacles: the wilderness of nature, the attacks of the Indians, the difficulty to obtain tools and seeds; they had to adapt to climate and soil, completely different from that to which they had been accustomed. They had to restrict themselves to the most primitive methods. . . . They took the harvest which nature presented without prudent thought. . . . America was such a big and fertile country that it took the people more than a century before they discovered that there was a limit even to the most fertile soil. . . .

To make these fast areas productive again, after the soil had been destroyed by speculation and ignorance, is now an

essential point for the USDA. In the last years (1947/48) the USDA has made fruitful again circa 55 million acres, which is only one-tenth of the eroded surface.

In the *Yearbook of Agriculture* for 1943-47, one reads:

. . . Since agricultural science touches every single life, we have to familiarize ourselves with the fact, that a new and decent world depends on a strong and vigilant knowledge of the farmer. This is important since we have finally to comprehend that no group can live securely when another has to live without confidence and hope. Many of us do not realize that science can physically accomplish fullness. . . .

That means that the USDA wants to educate independent farmers so that they can make use of the research experiments. That means basically that the USDA wants to be a transmitter of science that takes intelligible instruction directly to daily life, constituting a central collection point for--and a distributor of--agricultural information. That means that, by occupying itself with the smallest, most insignificant activities of daily life, the USDA wants to provide education and knowledge for a new world. It is an attempt to act before it is too late. It is a manifestation of a will to compensate for the mistakes of the past. It is the expression of fear at the right time. It is an anxiety for the present condition and the determination to achieve a better future. That means the USDA could be an ingenious idea for the preservation of the peace, for the prevention of hunger, and for maintaining life.

\* \* \*

Where could we get information? There are libraries in America in every little hamlet. These local libraries are open twice a week in the evening. They often have quite an imposing array of works: Dickens, as well as the newest publications of American literature, books on agriculture, and the history of the municipality. There are detective stories and, above all, children's books. The little towns have larger libraries. For instance, our neighboring city has not only a quite extensive collection of books, but also a beautiful collection of Chinese porcelain. The big cities have libraries of enormous size.

The university libraries are something very special. My

good luck to land in the library of the Dartmouth College was also my undoing, since it gave me the feeling that I could not be happy anywhere else. When one is settled there, it seems all other libraries (especially in Europe) are charitable boardinghouses or station waiting-rooms, tax offices with varying and unpredictable opening times, where rules and regulations are posted, where officials in grayish-white smocks make you feel like a petitioner. Or you feel like a student who cannot afford to buy books and therefore has to accept alms, under the strict eye of a watchman who sees that you don't pocket anything. . . .

In America you are a guest. The employees are dressed as for a tea-party, where the host is proud to show his library in hopes that you will find the books in which you are interested. The prevailing atmosphere is friendly and leisurely. Still, the people there can feel the latent energy stored in books and the importance of bringing it to life and making it useful.

When I first stepped into a section of the revolving door in the entrance hall, I felt as if all my worries dissolved into thin air. The library stands on a hill exactly in the middle of town. That is no coincidence. The building dominates the others that are grouped around it. It is simple and beautiful. . . .

When the Dartmouth College Library was opened, the librarian said:

. . . Any achievement of the human spirit rests on faith. Those who planned this library, planned with faith and they put in its building certain convictions. They believed that Dartmouth should reach the point at which it teaches that all things interlock and centralize around one reality. Therefore they decided to put the building in the heart of the university and surround it with related college buildings. That is why they collected all the books and brought them to one central place.

They believed that it is good to surround youth with beauty and that beauty belongs to education. Therefore they carefully designed the rooms and planned decor and furniture with their mind on creating beauty. They believed that the students should have the opportunity to read with pleasure as a source for contemplation and leisure. They believed that this is the surest way to sharpen and to

(Concluded on page 13, col. 2)

## LAND USE RECORDS IN THE NATIONAL ARCHIVES BUILDING

by  
Douglas Helms \*

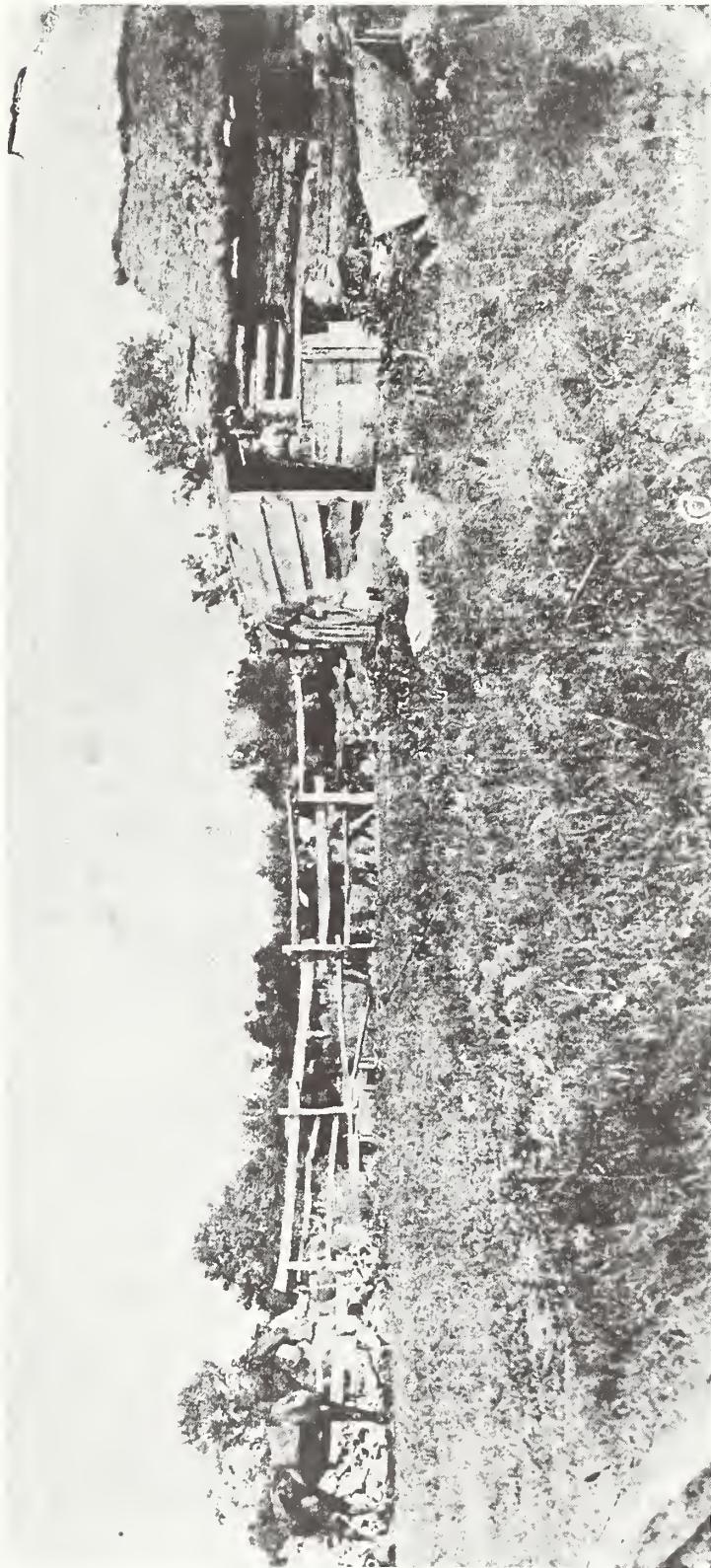
The early European explorers sought precious metals in the New World. The initial disappointments in North America gave way to an appreciation of the asset that would give the continent a place in the mercantile system: land. The bounteous arable lands in a moderate climate supported agricultural producers who in turn supplied a market for manufactured goods from Europe. Early land use exhibited some degree of planning, either by virtue of the decisions of the landed proprietors or the visions of religious sects in trying to establish a cohesive community. After the American Revolution the newly established national government gave little thought to imposing its will on the use of the land, rejecting the idea as a vestige of a European tradition it did not wish to emulate. But, in formulating the Constitution, the founders made a decision that has immeasurably aided our understanding of early land use, the requirement of a census. Originally intended to measure population, the census enumerators increasingly sought information on agriculture and manufacturing.

The National Archives, when established in 1935, became the custodian of these and other permanently valuable records of the United States government. Other decisions of the federal government resulted in the creation of records that document land use. The democratic ideal of a nation of small owner-operated farms prompted land acts designed to dispose of the national domain equitably, in small portions. This required land surveys and mapping. Homestead entry papers detailed the settlement of a considerable portion of the United States. The records of the General Land Office, now the Bureau of Land Management, copiously document the disposition of the national domain. The records generated in supervising the Timber Culture Act of 1873 and the Desert Land Act of 1877 reveal government attempts to influence private use of the land. But the mere inducement of free or cheap land was insufficient to foster agricultural development in the semi-arid West. The financial and technical assistance that made possible irrigation agriculture in parts of the West are covered by the records of the Bureau of Reclamation.

The Census of 1890 announced the closing of the frontier; yet much land remained that was suitable for agricultural expansion, and the acreage of improved agricultural land continued to increase. By the 20th century the evidences of gullied land in the South, barren hillsides in New England, cutover lands in the North Central states, and dust storms in the Great Plains raised doubts as to the wise use of the land. President Herbert Hoover and, later, President Franklin Roosevelt expressed the needs to study land use and to remove marginal lands from agricultural production. The Department of Agriculture undertook a study of land use in the 1930s; implicit was the idea that land use planning for the future necessitated a thorough knowledge of contemporary land use. The resulting records are the most comprehensive on land use throughout the United States for a given time. The participants in this task included the Land Policy Section of the Agricultural Adjustment Administration, the Land Utilization Division of the Resettlement Administration, and the Land Economics Division of the Bureau of Agricultural Economics--the records of all these units eventually coming to rest with

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THE FIRST HOMESTEAD FILED UNDER ACT OF 1862: PIONEER HOME OF DANIEL FREEMAN  
*(Courtesy, Chamber of Commerce, Beatrice, Nebraska.)*

the latter agency. The project files and correspondence include information on conditions and trends in land utilization of major regions and selected localities. The selected areas are in many cases political units, specifically counties, or physiographic units, as in the case of the studies of the San Jacinto Texas watershed or the Mississippi backwater area. The studies reflect farmers' varying uses of land for crops, pasture, woodland, and other purposes. The records of the Division of State and Local Planning in the Bureau of Agricultural Economics include information on land use by virtue of reports and minutes of meetings submitted by state and county land use planning committees.

Another Federal agency, the National Resources Planning Board (NRPB), was also instrumental in conducting studies to aid in formulating plans for land use. The records of the NRPB, 1933-1943, include approximately 1,600 reports on land problems in particular area, land classification, areas suitable for agricultural settlement or recreation, and lands desirable for public acquisition. The records of the Forest Service include statistical reports on acreage devoted to specific uses on a county basis, which the Service prepared for the Land Committee of the Board.

The Soil Conservation Service early felt the need to study the history of soil erosion in the United States. The project, funded by the WPA, involved abstracting information about land use and farming methods from a wide variety of sources (including diaries, journals, newspapers, and published works). The resulting documentation covers all regions of the nation and the history of agricultural development.

The study-and-analysis aspect was only one thrust of the land utilization program of the 1930s. Another aspect involved remedying some of the more destructive land use practices by purchasing land deemed unsuitable for agricultural use. The acquisitions from 1933 to 1946 (totaling 11,299,000 acres) were allocated to state governments and federal agencies for restoration to grasslands, forests, wildlife refugees, or recreation areas. Other purchases involved the designation of lands suitable for agricultural settlement to resettle the 24,148 families originally residing on the retired lands. Only nine percent of these families eventually moved to resettlement projects. The project files and land acquisition case files in the records of the Soil Conservation Service and the Forest Service provide the most microscopic documentation of land use. The files for both approved and unapproved projects include narrative and cartographic evidence of the condition and

use of the land at that time.

The cartographic records in the National Archives building include extensive documentation on land use, in addition to those generated by the land utilization program. There are numerous dot maps, derived from Census information, in the records of the Bureau of Agricultural Economics showing crop production patterns. The 1,600 maps generated by the soil survey program of the Bureau of Soils and later by the Bureau of Plant Industry, Soils, and Agricultural Engineering provide coverage of a large portion of the United States. Maps created by the Bureau of Reclamation provide visual evidence of the development of the irrigation agriculture, and the records of the Soil Conservation Service include maps on land drainage. The records of the Bureau of the Census include more than 50,000 enumeration district maps. The annotated base maps include a plethora of state, local, and privately published maps covering 1900-1950. Aerial photographs created by several Federal agencies cover 85 percent of the contiguous states and present Americans' use of their land in minute detail.

The Department of Agriculture has long relied on photography in studying American agriculture. The photographic prints and negatives of the Soil Conservation Service are particularly slanted to land use and land use problems. The records of the Bureau of Agricultural Economics include photographs (taken by the Office of Farm Management, in studying the most efficient methods of agricultural production) that reveal much about land use.

Among recent records on land use in the National Archives building are those of the Public Land Law Review Commission, created in 1964 to study the law, rules, and regulations concerning the use of public lands. The records contain statistical information on the major uses of public land, including residential, recreational, forest and wildlife, commercial, governmental, educational, scientific, utility, transportation, and military. These records supplement those of the agencies having custody of the remaining public lands, primarily the Forest Service, National Park Service, Bureau of Land Management, and Bureau of Indian Affairs. They contain extensive documentation on uses for grazing, lumbering, mining, and recreation. The records reveal the evolution of the ideas for retaining the land in the public domain and uses it has been put to--from a concern for insuring a continuous supply of timber and planned use of minerals to preserving scenic and natural areas.

(Continued on page 11)

## ACCESS TO DATA BASES ON LAND USE MATERIAL

by  
Charles Bebee\*

There is a growing research interest in the many-faceted problem of the use and abuse of America's natural resources. In this regard, the National Agricultural Library has access capabilities to over 50 data bases. Many of these files offer some material on the subject of land use. The following list of files on land use indicates the current research potential of some data bases in this critical subject area:

### PRINCIPAL FILES (1000 to 10,000 CITATIONS)

File 10: AGRICOLA  
9073 LAND USE  
File 50: CAB ABS 72-77 APR  
2853 Citations Related to Land Use  
File 35: COM DISSERT ABS  
1861 - 1977/J  
1822 Related to Land Use

### SECONDARY FILES (500 to 1000 CITATIONS)

File 8: COMPENDEX 70-77/MAY  
900 Land (W) Use  
File 1: ERIC 66-77/MAY  
749 Land (W) Use  
File 40: ENVIROLINE 71-77/JAN  
2243 Land (W) Use  
File 6: NTIS 64-77  
7069+ Land (W) Use  
File 18: PTS FG5 INDEXES 72-77/MAR  
549 Land (W) Use  
File 60: USDA/CRIS 75-77/APR  
876T Land (F) Use

### MINOR FILES (100 to 500 CITATIONS)

File 15: ABI/INFORM 71-77 APR  
208 Land (W) Use  
File 48: FEDERAL INDEX APR 77  
230 LAND (W) Use  
File 48: FEDERAL INDEX, APRIL 77  
230 Land (W) Use  
File 34: SCISEARCH 74-77/WK18  
259 Land (W) Use

### SMALL FILES (LESS THAN 100 CITATIONS)

File 38: AMERICA: HIST & LIFE--TEST  
49 Land (W) Use  
File 59: DMMS TEST  
19 Land (W) Use  
File 58: GEOARCHIVES TEST  
6 Land (W) Use  
File 39: HISTORICAL ABS--TEST VOL 19-20  
15 Land (W) Use  
File 28: OCEANIC ABS 64-77/FEB  
23 Land (W) Use  
File 7: SOCIAL SCISEARCH 72-77/WK18

436 Land (W) Use

File 41: POLLUTION ABS

70-77/FEB

108 Land (W) Use

File 16: PTS MARKET

ABS 72-77/MAY

167 Land (W) Use

File 27: FOUNDATION

GRANTS 73-77/

VOL 1

80 Land (W) Use

File 29: MET/GEASTRO

ABS 72-76/JUNE

83 Land (W) Use

File 46: NICEM TEST

VIDEO

8 Land (W) Use

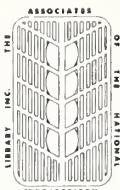
File 17: PTS WEEKLY

JUNE 2, 1977

27 Land (W) Use

For further search information on this and related subjects, contact Charles Bebee, Head, Automated Search Services, Room 111, National Agricultural Library, Beltsville MD 20705.

\* Charles Bebee is head of Automated Search Services, National Agricultural Library.



## EDITORIAL

## REFLECTIONS

Beginnings . .

### BEGINNINGS OF THE BUREAU OF AGRICULTURAL ECONOMICS BRANCH LIBRARY

by  
Angelina J. Carabelli\*

Beginnings are so very important. The Bureau of Agricultural Economics Branch Library actually had its beginning in 1862, when the United States Department of Agriculture (USDA) and the USDA Library were established. At that time Agricultural Division Library of the U.S. Patent Office transferred to the new Department its collection of approximately 1,000 volumes to become the nucleus of the USDA Library.

During the first decade of its existence the USDA Library progress was slow and its services limited. In 1893, W. P. Cutter was appointed Department Librarian through the U.S. Civil Service Commission. The USDA Library was now recognized; modern library methods were introduced, appropriations were gradually increased; and in 1901 Mr. Cutter proposed a system of Bureau libraries with strong affiliations with the USDA Library. The Library's growth progressed rapidly, as did the Library's collections, including agricultural economics literature and the collection of foreign and domestic statistics, which soon was conceded to be the most complete in this country. Interest in these segments of agricultural literature has continued through the years.

The growth of the USDA brought many changes in organization, administration, and locations of bureaus and divisions. These changes had inescapable effects on the Library's staff and services. However, because of an alert, progressive, and dedicated staff under the direction of Claribel R. Barnett, who came to the Library in 1895 and who served as the Librarian from 1907 to 1940, the changes were taken in stride, with little or no confusion. The exceptional vision of the Library's administrative staff that all components of the Library were parts of one system made it possible to shift collections from one location to another, to expand or contract as required, with apparent ease.

The formation of the Bureau of Agricultural Economics (BAE) on July 1, 1922, made it imperative to formulate a policy for the future development of a BAE Branch Library to meet the needs created by the consolidation of the Bureau of Markets, Bureau of Crop Estimates, and Office of Farm Management Branch Libraries.

In a cooperative effort Dr. H. C. Taylor, chief of the new bureau (BAE), appointed Oscar C. Stine to work out a policy for the BAE Branch Library, in cooperation with the Department Librarian. Many changes were made, but the basic policies for the new branch emphasized the continuance of the concept that the primary goal remain that of service--and only secondarily a collection of literature.

The physical coordination of the branch libraries proceeded remarkably well; combining of card records, elimination of duplicate materials, orderly rearrangement of periodical files, and so on were completed without incident. On August 1,

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1923, Mary G. Lacy was appointed the BAE Branch Librarian, which position she held until the 1940-42 centralization of all USDA libraries.

The BAE Branch Library was the fastest growing of the Bureau Libraries. It consisted of collections of agricultural economics, cooperation, marketing of agricultural products, rural sociology, land and rent, agricultural labor and wages, finance and commerce, statistical collections of the Department relating to acreage, production, prices, and so forth of agricultural crops.

Beginning with January 1927, the *Library Supplement to BAE News* (which had been issued since January 1923) changed its name to *Agricultural Economics Literature*. It was enlarged in scope; and each month carried a list of State Bulletins with notes of economics, a list of USDA publications economic in character, an annotated list of the outstanding periodical articles of the previous month, and an annotated list of the outstanding articles in foreign periodicals. *Agricultural Economics Literature* was issued until the *Bibliography of Agriculture* was inaugurated in 1942.

The BAE Library's reference--and its extensive bibliographical--services reflected the economic situation in the United States and foreign countries. In the Department Librarian's *Annual Report to the Secretary of Agriculture for the year ending June 30, 1932*, the following was recorded by Miss Barnett:

... As the Bureau of Agricultural Economics was formed in July, 1922 . . . the past year marked a decade in the Library's growth. At the time of its formation few bibliographical aids to agricultural economics were available . . . and in addition to issuing a monthly publication devoted to current literature, has issued between 40-50 extensive bibliographies of lesser significance. It does not seem to say too much, therefore, that the Library has done its fair share in the work of organizing the knowledge of agricultural economics. . . .

The BAE Library continued its growth. In 1938 the largest undertaking in the Library was the publication of the 1,506-page USDA Miscellaneous Publication No. 284: *Bibliography of Land Utilization 1918-1936*.<sup>1</sup> The bibliography contained more than 7,300 references, in three parts: (1) general publications covering the U.S. and foreign countries, (2) references relating to the

the U.S., and (3) references to foreign countries. It is a companion volume to the USDA Miscellaneous Publication No. 172, 1934: *Bibliography on Land Settlement, With Particular Reference to Small Holdings and Subsistence Homesteads*.<sup>2</sup> These bibliographies were the recipients in 1935 and 1939 of the Eunice Rockwood Oberly Award, presented biannually for bibliographic efforts in the field of agriculture or related services, during the Annual Conference of the American Library Association.

Other BAE Library bibliographies to receive this honor were, in 1927, by Mary Goodwin Lacy and others;<sup>3</sup> in 1929, by Annie Murray Hannay;<sup>4</sup> and in 1933, by Louise Oldham Bercaw and Esther M. Colvin.<sup>5</sup> All BAE-Library bibliographies were prepared under the general supervision of Mary G. Lacy, the Bureau Librarian.

The BAE Library was destined to become the largest of the Bureau libraries; and there is little, if any, doubt that its collections were the most complete in the United States--and perhaps the world. Again, this was made possible by the cooperative efforts of its users, the BAE personnel, and the expertise, administrative ability, and dedication of Claribel R. Barnett, Mary G. Lacy, and their staffs.

Beginnings are so important, but so often overlooked!

#### NOTES

1. Louise Oldham Bercaw and Annie M. Hannay, *Bibliography on Land Utilization, 1918-1936*, compiled by Louise O. Bercaw and Annie M. Hannay in cooperation with the Land Utilization Division, Resettlement Administration, USDA; Library, Bureau of Agricultural Economics (Washington: GPO, 1938).
2. Louise Oldham Bercaw, et al., *Bibliography on Land Settlement, With Particular Reference to Small Holdings and Subsistence Homesteads*, compiled by Louise O. Bercaw, A. M. Hannay, and Esther M. Colvin, USDA Library, Bureau of Agricultural Economics (482 pp.; Washington: GPO, 1934).
3. *Price Fixing by Governments 424 B.C. - 1926 A.D.: Select Bibliography, Including References on the Principles of Price Fixing, and on Price Fixing by Private Organizations*, compiled by Mary G. Lacy, Annie M. Hannay, and Emily L. Day, USDA Library, Bureau of Agricultural Economics; Agricultural Economics Bibliography, No. 18 (149 pp.; Washington, 1926).

4. *Bounties on Agricultural Products: A Selected Bibliography*, USDA Library, Bureau of Agricultural Economics; Agricultural Economics Bibliography, No. 20 (128 pp.; Washington, 1927).

5. *Bibliography on the Marketing of Agricultural Products*, compiled by Louise O. Bercaw and Esther M. Colvin, USDA Library, Bureau of Agricultural Economics; Agricultural Economics Bibliography, No. 150 (351 pp.; Washington: GPO, 1932).

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## AGRICULTURE OF THE PLAINS STATES: A SPECULATION ON LAND USE POLICY FOR CENTURY THREE

by  
W. A. Dando and R. D. Mower\*

Land, an all-encompassing term for the interface between the bedrock and the atmosphere, provides the matrix for life on planet earth. Land is one of the world's most abundant and productive natural resources. The promise of privately owned land was the prime motivating factor that enticed mass migration from the eastern United States and Europe to the Plains States of North America during the 19th and early 20th centuries. Each new cultural group brought distinct cultural characteristics, ideologies, and attitudes; these included agrotechniques and skills, as well as strong viewpoints on how the land could best be used. During the settlement process the new farmers and ranchers converted the natural landscape into a cultural landscape; they produced a pattern of diverse land use that is indelibly imprinted upon the land.

Land resources in the Plains States of the United States have contributed greatly to the economic well-being of this nation, and currently the Plains States constitute one of the principal food surplus producing regions of the world. Agriculture in the Plains States, based upon rich land resources, has contributed to the evolution of a unique way of life and to one of the highest levels of rural living in the world. Traditional uses of the land, however, are coming into conflict with the expanding demands for land by nonagriculturalists. Historically, the marketplace has played a dominant role in determining the price and the use of land; but, in the future, land use will be increasingly monitored and guided by changing societal needs and aspirations.

### LAND USE CONCERNS

During the early settlement of the Plains States, land use concerns were restricted to physical constraints. Problems of overcoming space, water, fuel, isolation, and natural hazards left little time for other concerns. Land use problems related to economic factors never really began until after the land base had been fully occupied. Though the rectangular survey system brought order in the land, allocated right-of-ways, and reduced potential conflicts, problems arose between those engaged in livestock ranching and sedentary agriculturalists. Population pressures and needs for grain in the American East and in Western Europe forced the rancher off the best agricultural land and into less desirable areas. Once the land base was relatively fully settled, the use of the land was determined primarily by economics--the marketplace. As a result, land has tended to be used for those purposes that have brought the greatest financial returns, when not restricted by law.

As population pressures affected open grazing by cattle and sheep, likewise population pressures have begun to affect land that has been used for corn, potatoes, and wheat. As nonagricultural needs have required additional land, increasing pressures have been placed upon agricultural land adjacent to urban areas for residential, industrial, and commercial

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purposes. Rural sites for parks and large recreational areas, wildlife preserves, and seasonal homes have also modified traditional land use patterns. Because of uncontrolled or unplanned growth, dwellers frequently have expressed concerns about farm odors, noise, and dust, as well as family safety. Farmers in turn have complained that urban activities, particularly pollution and mining activities, have reduced crop productivity. More recently, concerned citizens have focused on the conversion of prime agricultural land for urban purposes which are, in their opinion, detrimental to national and world food needs.

The basic concern of those who now study land use in the Plains States is no longer physical constraints of the land or region; rather, they are more concerned about the unwise, unmanaged, nonagricultural use of prime agricultural land, which in many instances may be counterproductive to man's welfare.

#### HISTORY OF LAND USE

The official policy of the United States Government in the 19th and early 20th centuries was to promote settlement and development of the Plains States as quickly as possible. Very little was done at the national level to identify, inventory, protect, and develop the natural wealth of the land.

The Homestead Act of 1862 provided settlers 160 acres of free land, and the Desert Land and the Timber and Stone Acts of 1878 permitted selected cattle and timber entrepreneurs to gain title to vast land holdings at very little cost. A dual system of giving land away and selling it at a modest price existed. Ranching became the primary land use until immigrants with experience in farming pushed into the Plains in great numbers. Crop agriculture was more labor intensive and required less land to support a family. Moldboard plows, barbed wire, windmills, grain drills, and binders assisted in the land use transformation. Farm output increased because of improved technology and crop specialization. Crop acreages increased until the mid-1920s, along with the number of farms and farm population.

After this date, farm numbers began to decrease, while farm size and tenancy increased. Nonagricultural use of the land expanded on an average of one million acres per year. An intense agricultural drought in the 1930s, combined with a worldwide economic depression, led to large-scale abandonment of farms in marginal

agricultural areas. The economic and social depression of the 1930s accelerated a trend from rural to urban employment. World War II brought the Plains States out of the depression. Improved weather and increased world food needs provided the stimulus necessary, and agricultural productivity increased dramatically. Use of power machinery, improved seed, and the application of fertilizers and pesticides helped to speed up land use change.

The most dramatic land use shift if the 1950s and 1960s was a conversion of pasture and grazing lands in the Plains States to cropland. Land use trends in the 1970s include increases in farm sizes, land value, irrigation, urban and built-up acreages, and in the use of the land by the mining industry. Mining in the Plains States is a relatively new use of the land. Strip mining greatly disturbs the land's surface, and care is needed to avoid destruction of the land's capabilities for future land uses. The policy of the United States Government and the attitudes of the affected States towards exploitation of abundant fossil fuel deposits near the surface in the Plains States will play an important role in future land use.

#### GOVERNMENTAL POLICIES AND LAND USE CHANGE

Federal, state, and local governments have enormous influence on current and future land use. The federal government administers over 100 programs involving land use in selected aspects of agriculture, transportation, wildlife management, recreation, and regional development. Several agencies within the U.S. Department of Agriculture (Agricultural Stabilization and Conservation Service, Agricultural Research Service, Cooperative State Research Service, Farmers Home Administration, Soil Conservation Service, Great Plains Conservation Program, and the Forest Service) are involved in activities that involve land use. The Department of Interior (through the Bureau of Land Management, Bureau of Indian Affairs, Geological Survey, Bureau of Reclamation, Office of Water Resources, Bureau of Mines, Bureau of Sport Fisheries and Wildlife, Bureau of Outdoor Recreation, and the National Park Service) manages millions of acres, promotes research and conservation, and plans development of public lands. In the Executive Office of the President, the Council on Environmental Quality recommends policies for land protection and improvement. The Environmental Protection Agency and the Corps of Engineers also influence land use to an extent. In addition, many other agencies affect agriculture in the Plains States, for through the years

the nation has become aware that there is an important need for better land use management.

Most states have local, regional, and state planning agencies or committees and have adopted planning and zoning laws. Their immediate concern has been the conversion of cropland to urban uses. State and local governments use zoning, taxation, agricultural districting, development rights, flood control districts, and strip-mine reclamation laws to control or direct changes in the use of land. Land use management can be exercised by various levels of government through zoning and planning laws (legal action), and by differential tax assessment (economic rewards or penalties). Laws designed to protect the public and the landowner do exist in most areas and are administered by all levels of government. In general these laws are designed to provide direction to changing land use patterns, rather than to inhibit progress or restrict necessary modification in land use.

#### TRENDS IN AGRICULTURAL LAND USE

Demands for agricultural products by the developing world and by increased affluence in the developed world, along with acute national energy demands, will accentuate land use change in the Plains States. Conflicts over land use will increase, especially where rich agricultural land is contiguous to expanding urban centers. Federal programs to stimulate food production for export and agroindustrial demands for storage, protection, and wise use of water will create conflicts among private landowners, environmentalists, farm interests, and energy-related industries. There will be continued emphasis on development of new energy sources, and there will be increasing pressure to establish policies to achieve a balance between energy needs and environmental protection. Fossil fuel reserves in the Plains States will be developed, and high-voltage power lines will dominate the rural landscape from the mine-mouth plants to the major urban centers and beyond.

Increased costs of energy will modify traditional agricultural practices, restrict nonfarm residential development in agricultural areas, and influence business and consumer choices in nearly all levels of life. Costs of almost all services will increase (including health care, housing, transportation, and government)--forcing increasing numbers of nonurban, noncentral-place dwellers into population nodes. Present expectations that standards of living will continue to rise will not be

fulfilled, and people and governments will be forced to reevaluate their priorities.

#### TRENDS IN CROP PATTERNS

Land use and crop patterns will be modified greatly by the year 2000. Miniaturization and computerization of farm equipment that will enable fewer agricultural engineers to plow, plant, and harvest crops will lead to a reduction of farm units and an enlargement of individual or corporate farms. Multi-State irrigation districts and expanded well-irrigation systems will provide more control over the physical environment conducive for plant growth. Road patterns superimposed upon the landscape by the township and range land survey system will be modified, and a new farm-enterprise/central-place system created. New agrotechniques will create a different rural landscape--one with vast fields, unique soil moisture practices, and few fences.

Innovations in crop genetics will provide new wheat strains that will double yields per acre. Corn will be developed to mature with fewer energy requirements (both solar and fossil) and within the same growth span as wheat. Improved strains of barley, oats, sugar beets, potatoes, sunflowers, soybeans, and other commercial crops will require less water, less energy, but will produce greater yields. Crop productivity in general will increase, and new crops will replace those that are not compatible with the agrotechniques that necessarily must be employed; and changes in the national and international market. The only permanent factor in Plains States agriculture will be accelerated change.

#### ALTERNATIVE FUTURES

Increases in the demand for land in nonagricultural uses have been in response to the increased population and the economic development of the nation. Agricultural land is not a scarce resource. In the 1970s, crop production from one out of every three acres was exported. The United States has flexibility, from a domestic food standpoint, in allocating land between agricultural and nonagricultural land uses. A decision must be made whether to use land for food production or for other uses on the basis of national priorities. Do we have the responsibility to feed the world's hungry? And in case of famine, whom do we feed if we do have food for export? Must the domestic consumption of energy be maintained at the expense of disturbed land and

(Continued on page 39, col. 1)

## BOOK REVIEWS

With this issue *Associates NAL Today* introduces a regular section devoted to book reviews. Books to be reviewed in forthcoming issues will be of a scholarly nature and will deal with agriculture and related topics as broadly defined. Books chosen for review will also relate to the selected topics of each issue. Persons interested in reviewing books, having books reviewed, or simply having questions about the reviews should address correspondence to Tom Fulton, Book Review Editor, *Associates NAL Today*, Room 150, GHI Building, 500 12th Street, S.W., Washington DC 20250.

William A. Dando and Gary E. Johnson, eds. *Innovations in Land Use Management*. Grand Forks ND: University of North Dakota Press (\$5.00). (Review by Kathryn Zeimetz, USDA.)

The proceedings of the Innovations in Land Use Management Symposium (ILUMS), the conclusion of the North Dakota Land Use Planning Project (NDLUPP), are presented in this book. The symposium "focused on the technology currently available in the form of remotely sensed data and information systems as applied to the management of land and water resources." The book suggests that the symposium was somewhat distracted from its focus by the overall project aim--that is, to present objectively the concept of land use planning to the citizens of North Dakota. Several articles do not consider technical innovations but do discuss the growing need for land use management because of changing international, national, and local demographic and energy conditions. To limit this broad topic, the planners of the symposium (and editors of this book) were geographically selective, considering the specific need for and experiences in land use management in North Dakota and its neighboring states and province.

One exception to this geographical limitation is the article that forms Part 1. James R. Anderson summarized the U.S. Geological Survey's (USGS's) national program of land use mapping and development of a geographically oriented information system. The importance of the USGS programs is that they are based upon a pyramidal standardization of land use covers. Land use classifications developed for other federal, state, local, and private programs should be suitable for aggregation into USGS land cover classes in the most general categories. Although the problems resulting from lack of standardization are emphasized throughout this book, the projects discussed show that many state and local projects do not use the flexible USGS classification system.

Articles describing innovations in land information systems and the need for land use policy in Minnesota, South Dakota, Montana, Manitoba, and Missouri form Part 2. Part 3 is a summary of land use programs in North Dakota, including the activities of the Regional Environmental Assessment Program, an information and modeling system. Part 4 contains specific examples of uses of remote sensing to gather land use information in North Dakota. The book concludes with a section on suggested readings.

The editors state that "the purpose of this book is to contribute to the understanding of innovations in land use management." Most of the articles contributed to this end; and as the book is a record of the proceedings, it would be difficult for the editors to eliminate less relevant articles.

James S. Donnelly, Jr. *The Land and the People of Nineteenth-Century Cork: The Rural Economy and the Land Question*. Studies in Irish History, Second Series, 9. London and Boston: Routledge and Kegan Paul, 1975 (xiv+440 pp., \$31.25). (Review by John Huttman, Department of Economics, San Francisco State University, reprinted with permission from *Agricultural History*, Vol. 50, No. 4, October 1976.)

The title of this book suggests it is a history of one of Ireland's 32 counties over the last century. It is that, at least in part, but it also reviews the events experienced by all of Ireland over the 19th century. Donnelly explores various aspects of the rural economy, including the subdivision of holdings that accompanied the rapid growth of population in the first half of the 19th century and the Great Famine of midcentury. He looks at agricultural changes occurring in the last half of the century, including shifts from crops to stock grazing in response to changes in market prices. He looks at the management of estates over the years from

the 1850s until the implementation of land-reform legislation in the 1880s. And, finally, he focuses upon the conflict between peasants and landlords, culminating in the conversion of most of the tenants into owner-occupiers.

The chapter dealing with estate management from the immediate postfamine years until the introduction of reform represents an original and valuable contribution to Irish agricultural history. Several other agricultural historians have been exploring this topic in recent years; but Donnelly's account, based on solid research into manuscript sources and estate records, is most comprehensive. He interprets landlord and agent management as generally rather enlightened, with only moderate rent increases (in most cases) and encouragement of tenant progressive agricultural methods. Donnelly's documentation seems to support these conclusions, although there exists a danger that innovative and humane landlords may be overrepresented in accessible primary sources. Cruel and indifferent landlords may have been more reluctant to communicate concerning their behavior, and those less scientifically inclined toward agricultural experimentation were perhaps less methodical in maintaining their records.

Donnelly makes cautious use of the works of earlier Irish historians, many of whom were susceptible to romantic notions of Irish character; but he uncritically accepts the findings of modern historians, including the late Kenneth Connell, Raymond D. Crotty, and Barbara Solow. Connell had advanced some questionable theories about population growth and dietary patterns; and Crotty and Solow argued, with only partial substantiation, that landlord exploitation of peasants through extortionary rents was a rarity.

John Fraser Hart. *The Look of the Land. Foundations of Cultural Geography Series.* Englewood Cliffs NJ: Prentice-Hall, 1975 (210 pp., \$4.95). (Review by Darwin P. Kelsey, Old Sturbridge Village, reprinted with permission from *Agricultural History*, Vol. 50, No. 4, October 1976.)

This little volume deals with subject matter that few American agricultural historian have taken seriously--at least in terms of their professional work. And the bibliography on these subjects generated by American geographers isn't particularly impressive either. The physical appearance of rural landscapes and the processes inherent in their evolution has held the interest of a variety of academic disciplines in Western Europe for

three-quarters of a century. Not so in the USA.

John Fraser Hart has done us a real service, therefore, by writing an essay that will introduce many aspiring young geographers, at least, to research possibilities relating to the history of rural life, its impact upon the environment and vice versa. He calls our attention to the distinctive imprint which every society with a particular set of cultural predilections, market circumstances, and technology leaves upon the landscape. They divide, apportion, and occupy land according to vastly different rules or systems--each, of course, considering its own inherently "natural" or "reasonable." Gross vegetational cover is transformed by the crop and livestock systems which prove workable in an area, and these systems similarly are manifested in the man-made structures (fences, houses, barns, creameries, wineries, etc.) which dot the landscape. Farmhouses, barns, and other structures get built of many different materials and in different styles; they are clustered in multitudinous ways in steadings, hamlets, villages, towns, cities, and metropolises. How and why? The reasons are often complex and subtle, and the author suggests but a few tentative answers while inviting us all to pursue the remainder.

In general, I find this volume to be a very worthwhile contribution to the literature of cultural geography, agricultural history, folklore, or similar academic disciplines. My greatest dissatisfaction lies in the author's (apparent) failure to make use of considerable recent scholarship. In the chapter on "Land Division in Britain," for example, no mention is made of the post-1965 studies by Baker, Thirsk, and others--or even C. T. Smith's synthesis. Similarly, in commenting on American land division, the numerous 17th- and 18th-century community studies published since 1970 go unmentioned. Hart suggests that he is painting with broad strokes, writing here more for the beginner than for the specialist. For his purposes, therefore, these studies might not change his presentation greatly, but I feel that beginners might well be informed (bibliographically, at least) of significant scholarly modifications to the views found in older works. This tendency to cite dated scholarship appears elsewhere in the volume as well.

Nevertheless, this is an important book. It is a delight to read; Hart writes well and has a fine sense of humor. And he points our scholarly attention to a subject it ought to have encompassed long ago: man's material culture manifested in every age by the landscapes he creates around himself.

John V. Krutilla and Anthony C. Fisher. *The Economics of Natural Environments. Studies in the Valuation of Commodity and Amenity Resources. For Resources of the Future, Inc.* Baltimore: The Johns Hopkins University Press, 1976 (292 pp., \$16.95). (Review by Jeff V. Conopask, Economic Development Division, reprinted with permission from *Agricultural Economics Research*, Vol. 28, No. 2, April 1976).

In a work that boldly tackles a difficult subject, Krutilla and Fisher have demonstrated the possibilities of theoretical and empirical economic analysis for practical problem solving. They present "operational models" for conducting quantitative analyses of the amenity value of environmental resources and conventional analyses of commodity resources.

The volume is divided into two basic sections (actually three if the advanced mathematics information is considered): one that lays an institutional and theoretical framework (four chapters) and one that applies the framework to five specific cases. Although much of the text draws upon Krutilla and Fisher's research, three of the cases represent a condensation from other research efforts of Resources of the Future, Inc. (RFF).

The authors set the tone in Chapter 1 with an adequate introduction to management of natural environments, particularly public lands. Early on, they discuss the idea that land in its natural state is not necessarily unproductive. In perhaps their strongest point, the authors single out the critical importance of direct and indirect Government subsidy in the alteration of wild lands.

Chapter 2 presents a discussion of failure by markets to allocate efficiently the resources of natural environments. Topics covered include common property resources, public goods externalities on public lands, and the relationship between assignment of property rights and resource valuation.

The important issues of irreversibility and time are considered in Chapters 3 and 4. A very lucid discussion appears on society's potential attitude toward the risk associated with the irreversible (in a technical, polyperiod sense) conversion of natural environments to developmental purposes. Because of the existence of option value and newer interpretations of the possible gains from trade among generations, traditional benefit-cost analysis of a natural resource

development project may be incomplete as a basis for a public decision. In a model using optimal control theory, the authors demonstrate that

where benefits from development of a natural environment are decreasing over time relative to benefits from preservation, the instantaneous optimum level is also decreasing.

(p. 57)

In Chapters 5 and 6 the authors apply the theoretical framework to the hydroelectric power plant proposals for the Hell's Canyon reach of the Snake River. They demonstrate how a critical review of a natural resource project may reveal some of the social costs (accounting for asymmetrical technological change and adjusting for subsidies), exclusive of the environmental costs. After determining that one of three proposals demonstrated net economic benefits, they evaluated the amenity resources, using the ecological carrying-capacity concept. The amenity valuation established a case for preserving Hell's Canyon by demonstrating that "quantitative analysis can be very useful even in the absence of its capacity to capture all of the values potentially attributable to preserving rare natural environments" (p. 135).

In Chapters 7 and 8 Krutilla and Fisher apply the framework to the White Cloud Peaks case (in which a marginal molybdenum extraction and processing facility has been proposed) and to development in the Mineral King Valley (in which additional capacity has been proposed within an existing system of intensive recreation facilities). Once again, the authors show that strong arguments against development, based solely on private market criteria, can be developed. The optimal capacity concept was used, in both cases, to ascertain what recreational demand levels might occur.

The final two cases are less site-specific. Chapter 9 addresses the problem of optimum allocation of prairie wetlands for breeding and habitat use by migratory waterfowl. The problem involves private and common property interests. In Chapter 10 the authors evaluate alternatives for Alaskan oil exploitation and transportation systems.

Assessing this book is difficult enough because of the biases introduced through a raising of expectations, only to find that the problem remains as tough to crack as ever. However, a noticeable dent has been made towards the valuing of environmental resources. One can expect

too much from people in an organization (RFF) that has continuously produced a rich body of knowledge on natural resource management. The amenity resource valuation work (recreational mainly) stems from the long line of research beginning with Marion Clawson in the '50s. Krutilla and Fisher attempt to value environmental costs, saying that "ultimately the environmental damages reckoned as economic costs will have to be assessed" (p. 279).

The feeling exists, after reading the volume, that environmental damages continue to be viewed mainly as uneconomic (except recreational), and that they represent an intangible (albeit important) value to society. Though this feeling may be an overreaction to the research caution (scientifically correct) of the authors, this reviewer remains ill at ease, given the influence of these two economists. For example, there are economic costs from the environmental damage of tidal marshland alteration, a specific cost not covered in the book. These costs include erosion and flood control plus waste assimilative capacity--to name a few. But the point is that ecology science disciplines may have knowledge beyond economics, which when given an economic interpretation (e.g., the prairie wetland work discussed above), allow a management tool to be applied in the context of broad social efficiency. Though a wealth of additional scientific data already exists, I believe much more exists than is apparent, based on the dearth of major publications on social costs (other than health and recreation). While agreeing with the authors that environmental issues constitute a methodologically difficult front, this reviewer contends that analysis must be pushed forward beyond normal economic consideration. Like it or not, we are allocating resources that are scarce (in quantity and quality) and unique, the long-run effect of which is often irreversible.

These specific criticisms of the work perhaps stem from unfair expectations of a broader perspective. However, when considering the use of natural resources, one needs a broader-brush analysis because of the possibility of future option foreclosure. When considering alternative energy sources, not only the *in situ* or direct production costs should be analyzed, but also the relative environmental costs. The environmental risk of a nuclear alternative was not even lightly considered in the Hell's Canyon case, although so-called ecocatastrophe issues were briefly discussed in the Alaskan Oil case. Damage to the Arctic tundra ecosystem would be hard to value in an economic sense, but damage to West Coast fisheries may

occur and require economic evaluation. Similarly, in the bioeconomic optimum allocation of wetlands, the authors did not consider the increased cost of plowing around the potholes, the assertion of flood losses (though the wetlands are purported to control flood levels and ground water recharge), and the lost agricultural production. While increasing the complexity of already complex problems, ecological solutions to ecological problems require this expanded approach.

On balance, the book provides a useful view of the state of the art. It is well written and well referenced. Both authors and the other researchers involved should be commended for continuing to push the capabilities of the dismal (and too often conservative and provincial) science into policy areas requiring the analysis of tradeoffs.

Based on the book's preface statements that it represents an "early effort" and that the "volume doubtless raises more issues than it is capable of resolving satisfactorily," a final comment by RFF's Marion Clawson is appropriate. In their 1974 annual report Clawson states: "The partial and piecemeal approach to environmental problems . . . ignored the maxims of ecology . . . everything in an ecosystem is related to everything else in that system."

John L. Shover. *First Majority--Last Minority: The Transforming of Rural Life in America*. DeKalb: Northern Illinois University Press, 1976 (338 pp., \$12.50 and \$15.00). (Review by James H. Shideler, University of California at Davis, reprinted with permission from *Agricultural History*, Vol. 51, No. 2, April 1977.)

Early in this century about 6.5 million dispersed, diversified, balanced, and organic family farms were grouped into rural communities. They sent off their surplus products through loosely organized middlemen to consumers enjoying cheap food. This arrangement was not so idyllic as retrospection makes it appear, but it did have values. Today there about 1.5 million farms, but only about half a million large establishments produce enough to count. These grind out commodities at the command of the great agribusinesses that push upon the purchaser goods that seem to be more petrochemical than farm product. This transformation gathered momentum slowly until World War II, then accelerated at a rate too fast for us to appreciate fully until the 1970s. Now a new turning point replaces the embarrassment of surpluses with shortages and presents expanded overseas demands

upon American productivity.

John Shover was troubled by observing in the course of his own lifetime what he called "The Great Disjuncture," and he resolved to probe its significances in his last book. It is an important work that will alter some thinking about food and agricultural policies--and arouse much debate.

With rare sensitivity and insight Shover reflects on the recent revolutionary shifts in American agriculture, their historical perspectives, and their consequences. He examines the technological innovations, the decline of the traditional family farm and rural community, a migration from farm to city, greater than a century of immigration from abroad, how the benefits of science and federal policy flow to a shrinking number of enterprises, the industrialized concentration of production--processing--distribution of agricultural commodities, inflated food costs to consumers, American export policies, and world food deficits.

Shover uses the case-study approach to illuminate the diverse and complicated patterns of agriculture and its history. A close analysis is made of two sample rural communities from settlement to recent alteration. Scioto Township in Ohio, where Shover originally came from, has disappeared as a community. Bedford County in western Pennsylvania became a sort of urban satellite. Two family farms are studied--one a model of a well-to-do farm in late-19th-century Iowa, and the other an example of a farm struggling to get along in Michigan during the '20s and '30s. Here Shover draws heavily from two works that impressed him with their accurate depiction of farm life: Henry C. Taylor's *Tarleywick: A Century of Iowa Farming* (Ames: Iowa State University Press, 1970) and Curtis K. Stadtfeld's *From the Land and Back* (New York: Scribner's, 1972). Then case studies of a different kind yield fresh appreciation of technological impacts, concentrated vertical integration in the agribusinesses, the role of the federal government, and the world food crisis.

While it is clear that Shover doubts the values of modernization, he disclaims any thought of turning the clock back--or very far back. He indicates that the processes of change in agriculture have gone far enough and that it is time for the development of new strategies to prevent the victimizing of consumers and the damaging of land resources by "ruthless centralization and consolidation" of agriculture.

What distinguishes this book and raises it above the level of argumentative tracts like those from the Agribusiness Accountability Project or the celebrations of progress from the agribusiness establishment is its historical perspective, wide-ranging search for data to underlay the analysis, and application of social science theory to agricultural changes.

James L. Sundquist. *Dispersing Population: What America Can Learn From Europe*. Washington DC: The Brookings Institution, 1975 (290 pp., \$3.95). (Review by Alan R. Bird, Economic Development Division, reprinted with permission from *Agricultural Economics Research*, Vol. 28, No. 3, July 1976.)

James L. Sundquist has written a very readable and informative book of likely interest to social scientists, community and national decisionmakers, and others who are concerned with national and rural development.

He points out that population dispersal has been a widely accepted U.S. policy objective, one that had been written into law by the 1970s. He seeks to help bridge the gap between this objective and its implementation by reviewing 30 years of relevant experience of five countries: Great Britain, France, Italy, the Netherlands, and Sweden. After facing the problem of population concentration, governments in these countries had concluded that growth of their largest cities should be checked; and they enacted ambitious and comprehensive programs to achieve that end.

Population distribution or growth, says Sundquist, has two usually separable and often distinct components. One involves growth *among* regions and larger or smaller urban complexes; the other concerns growth *within* metropolitan areas, particularly the larger ones. He calls the former the *macro* aspect of population distribution; the latter, the *micro* aspect. Sundquist restricts his study to the macro aspect. Are these two aspects quite as separable and distinct as he suggests? This question is one of several evoked by the author's data.

Sundquist presents several findings, described below:

1. All five countries have laws that specify policies and programs to encourage population dispersal. Some measures are extreme, by U.S. standards.
2. Early phases of policies typically sought to increase the number and proportion of factories locating or

expanding outside major cities. Federal incentives, such as preferential loans and grants, were tried. Licensing of new factories and factory expansions to restrict construction in populous areas, such as London and Paris, proved essential. Government construction of factories for rental to mobile manufacturers, sponsorship of improved community facilities and services, and provision of suitable industrial sites all were deemed helpful. The most mobile businesses were branches of large firms.

3. All the countries began with a local emphasis on distressed areas but evolved a "growth center" approach to the dispersal of manufacturing. For example, from 1966 to 1970, the French designated eight cities in as many regions outside Paris as counterweight metropolises to offset Parisian economic power.
4. Following the emphasis on factories, the countries moved (less successfully to date) toward dispersal of service industries. For example, governments licensed construction of office buildings; and they have also tried to decentralize government agencies.
5. Early support for these population redistribution policies and programs was political. Major cities were deemed overcrowded and polluted, and they suffered from transportation problems. Piling up of industry, as in Greater London, was seen as a threat to national security. On the other hand, relatively depressed, more rural areas needed skilled labor, entrepreneurship, and capital from cities to spearhead new industries and so add jobs for local people. The economic rationale and supporting data for these regional policies and programs have been (and remain) sketchy.
6. Political support for these policies and programs has lessened in recent years, although some measures will likely be retained indefinitely. Why? A slowdown in growth, and even a population decline in some cities, has tended to increase per capita costs of public services and facilities. Local unemployment rates have risen. Cities have begun to recruit manufacturers to replace jobs lost through transfer of firms. City spokesmen are now less convinced that increased size is bad, so that emphasis may shift to more qualitative guidance of local development. Rural areas seek industry, but not polluting firms.

Were the European population modifications cited by

Sundquist also economic successes? Representatives of the British motor industry, he reports, suggest that public thwarting of geographic concentration of production deemed necessary by the industry reduced efficiency, which in turn reduced export earnings and lowered the GNP. Government witnesses were said to point to the likely greater congestion due to more concentration, so that firms' costs and social costs would have both increased. The dispute is not resolved. Apart from data paucity, other reasons (perhaps more compelling) are the need for a broader conceptual base for evaluation--either by broadening economic concepts (such as GNP) or by adding new concepts, economic or otherwise.

The book offers both perspective and heuristic value. For these European countries (and the United States as well), the reviewer wonders: are the rate of growth of GNP and other significant national economic and social indicators favorably affected by market adjustments that help integrate local factors, including labor, into national markets? While manufacturing has been a favorite means of rural development, has its importance been overplayed? Are the relatively high-wage types of manufacturing also industries that best achieve economies of scale and agglomeration?

Without an explicit public population dispersal policy, U.S. nonmetro rates of population increase have recently outstripped metro rates. Does that fact enhance or diminish the relevance of Sundquist's report on the European experience? The author judges it will reduce U.S. political interest. For the economist, however, these changes may simply provide a new context in which to explain population patterns that are insufficiently accounted for either side of the Atlantic.

Do we have objective indexes of levels-of-living for various nonmetropolitan communities and descriptions of typical lifestyles of families at various income levels? Certainly not. On what basis, then, are migrants evaluating alternative living and job possibilities? What are the implications for rural and national development? Sundquist aptly illustrates the needed broad context for such evaluations.

William B. Taylor. *Landlord and Peasant in Colonial Oaxaca*. Stanford: Stanford University Press, 1972 (\$10.00). (Review by Bradly Chase, University of Maryland at College Park.)

The Valley of Oaxaca holds a unique place in the Mexican tapestry. Located on the last plateau before the inhospitable Isthmus of Tehuantepec in South Central Mexico, the Oaxaqueños escaped the more brutal aspects of both the Aztec and Spanish conquests. In recent times they have even appeared unimpressed with the Revolution of 1910. On the other hand, the people and the valley have made significant cultural and economic contributions to the Mexican fabric. During the pre-Columbian period the Mixtecas and Zapotecas formulated a sophisticated civilization, as evidenced by the stone edifices at Mitla and Monte Albán. Under the Spanish regime the region was known chiefly for the production of silk and cochineal for dye stuff. The mountains have always been valued for their rich mineral deposits.

As the title suggests, Taylor has chosen the Spanish period to explain the special history of this region. His thesis--namely, that the system of land tenure in the valley differed radically from that in northern Mexico--accounts for the strong Indian influence in the area and the lack of interest in the politics of Mexico City. Therefore Taylor considers this work a revisionist study, primarily of the notions set forth by François Chevalier in his study of the large Spanish estates (*haciendas*) in the north.

Taylor has divided the book into four main chapters (six in all), each treating one of the principle owners of land in the valley: the colonial cacicazgo (Indian nobility), pueblo and peasant lands (village and individual lands), and Spanish and Church estates. The first two sections (dealing with Indian lands) discuss the several factors that permitted the Indian to retain his holdings. Among these factors are found a sizable and highly adroit native population, the ability of the Indian nobility to acculturate, and wise Spanish administrators--lay, ecclesiastical, and royal. None of these factors is new, but the fact that each of them was constantly present throughout the Spanish period was a unique occurrence in the Mexican experience. In the two chapters discussing the Spanish and Church estates, one finds that Spanish estates accounted for only one-third of the land in the valley. In turn these holdings remained small and unstable, subject to resale and rental. The Church was the leading Spanish landowner, although many of their lands were fragmented and fluid, too. From the Spanish side of the question, the primary reasons given for the lack of large entailed estates are a lone and just conquistador named Hernan Cortés, watchful royal officials, and a changing economy. As a result, no Spanish group dominated the land; and the

Indian caciques and pueblos were able to maintain a high degree of independence and self-sufficiency.

Like most interesting studies, Taylor's work raises more questions than it answers; for, in effect, he has merely presented the structure of colonial land patterns in the Valley of Oaxaca. Since he does admit that aspects of the northern model were present in Oaxaca (particularly debt-peonage and landless Indians), a closer look at the haciendas and ranches in Oaxaca is warranted, to determine the extent and scope of these abuses. In many respects the information presented on the Indian nobility (while enlightening and refreshing) suggests that the Indian unwittingly became the tool of the conqueror--an intermediate social group between the master and the laborer, who was a master himself at times.

Unfortunately, Taylor's summary dismissal of the role of the merchants and miners leaves a serious gap in Oaxaca's social-economic structure. As he notes, this segment of the local population formed the wealthiest group; and one wonders what they did with their money if it was not reinvested in land. A related problem, the apparent lack of entailed estates, is similarly dismissed by a brief observation that most of the male offspring of Spaniards either entered the priesthood or became part of the merchant class. Since the eldest son usually inherited an estate, his observation is accurate. However, it is not an acceptable reason for explaining why more entailed estates were not found. Furthermore, the possibility exists that some estates were handed down through the daughter or another relative if a son was lacking.

Several other factors of this study are bothersome, also. To begin with, the study is much too short to cover three centuries of Spanish rule. Changes occur very rapidly in the course of each chapter (usually from the 16th to the 18th century) and amidst a great deal of detail. The reader is asked to accept too many documents at face value, without any criticism of them by the author. If one thing is certain about Spanish Colonial documents (especially census reports, tax records, and even land holdings), it is that they require special scrutiny before they are used.

In addition, the point needs to be stressed that Taylor's *Oaxaca* is not a revision (as he implies) of the ideas set forth by the early students of the north and central regions. Taylor's conclusions apply only to Oaxaca, although the temptation to implant them elsewhere is inescapable even by him.

In spite of these reservations, this book is informative and provocative. The discussion of Indian landowners and nobility "life style" offers new insights into an area previously only hinted at. No doubt, future studies will have to pay greater attention to what lies under the superstructure that he has established. The book deserves to be read and studied by a large audience of readers in both Mexico and the United States.

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(Continued from page 31)

environmental degradation in the Plains States? Vast amounts of the Plains States prime agricultural lands are being taken out of agricultural production. Wise use would employ all available regulatory means to encourage nonagricultural growth on lands not suitable for agriculture. Irrigation projects and other land-development programs should be encouraged. Another reasonable approach would be to invest additional funds in agricultural or related research. Land is the matrix for life. If man plans to maintain his present unique quality of life within the United States and within the Plains States region in the future, he must begin now to speculate on a national, regional, and local land use management policy for century three.

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#### SYMPOSIUM ANNOUNCEMENT

##### INTERNATIONAL AGRICULTURAL LIBRARIANSHIP: A CALL FOR PAPERS

The Associates of the National Agricultural Library, Inc., and others are planning to sponsor a fall symposium on "International Agricultural Librarianship: Continuity and Change," on November 4, 1977. The Symposium will focus attention upon the practical role of agricultural librarians and documentalists, the changing characteristics of agricultural resource centers, and the growing importance of both, in terms of informational services to the world community. The Symposium will be highlighted by a special tribute to Foster Mohrhardt, former Director of the National Agricultural Library. The program will be scholarly and interdisciplinary, with the participation of nonacademic authorities from public and private organizations.

The proceedings will be published and widely disseminated as an informative and educational document in the field of Agricultural Librarianship. In this regard, we hope to publish many important papers that could not be delivered in person.

FOR FURTHER INFORMATION, CONTACT ALAN FUSONIE OR LEILA MORAN, COORDINATORS, The Associates of the National Agriculture Library, Inc., 10301 Baltimore Boulevard, Beltsville MD 20705.

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